

WEBINARS

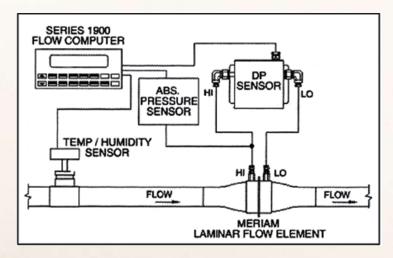
Meriam is proud to offer a series of Webinars (Online Seminars) to help you master skills on our products and their applications in the industry. All of these seminars are FREE and can be "attended" from the convenience of your office! Simply log in and follow along. The sessions are typically completed within 25 to 30 minutes and include a Q & A period at the end. Contact Meriam today to learn how to sign up.



uploading or printing later.

The Series 1900 Flow **Computer** is a versatile unit with many advanced features.

- Use with Laminar Flow Elements, Accutube® averaging pitot tubes, Orifice Plates, Venturis, Vortex, Turbines or other flow meters
- · Corrects for density and viscosity changes based on pressure and temperature inputs
- · Windows set up
- · Calculates corrected or actual flow rate and total
- · Analog, relay and digital outputs





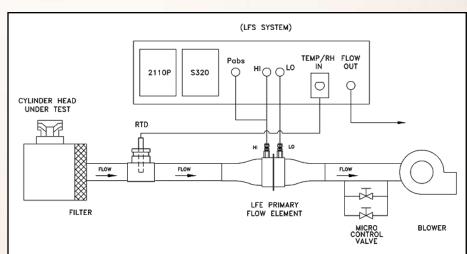
S320 Flow Computer

The modular design of the S320 (with a wide range of available analog slot cards and included digital I/O) provides the flexibility necessary to easily adapt this powerful system to your specific application. Transducer signal conditioning and power is provided by the dual channel slot cards. A broad variety of voltage, current, counter, frequency and pulse inputs and outputs may be employed. Most cards use advanced sigma delta and A/D techniques with conversions having a resolution of 12 to 24 bits for best precision.





- · Gas flow measurement, leak detection and control
- Suitable for any flow input or primary element
- High speed 32-bit floating point digital signal processor
- Battery backed RAM, Flash ROM, real time clock
- Advanced high resolution A/D converters
- Serial interfaces for control and data exchange



This illustration is an example of a typical LFS system utilizing an LFE as well as the S320 Flow Computer from Meriam.



Series 1900 Flow Computer

The Series 1900 Flow Computer satisfies the instrument requirements for a variety of flowmeter types in liquid, gas, steam and heat applications. Multiple flow equations are available in a single instrument with many advanced features.

The Series 1900 Flow Computer is compatible with Meriam Laminar Flow Element, Orifice, Venturi and AccuTube® Averaging Pitot flowmeter types. The alphanumeric display offers measured parameters in easy to understand format. Manual access to measurements and display scrolling is supported.

The Series 1900 Flow Computer permits a wide measure of versatility within the instrument package. The various hardware inputs and outputs can be "soft" assigned to meet a variety of common application needs. The user "soft selects" the usage of each input/output while configuring the instrument. Consider the following illustrative examples:

The isolated analog output can be chosen to follow the volume flow, corrected volume flow, mass flow, temperature, pressure, or density by means of a menu selection. Most hardware features are assignable by this method.

The user can assign the standard RS-232 Serial Port for external data logging, transaction printing, or for connection to a modem for remote meter reading.

A Service or Test mode is provided to assist the user during start-up system check out by monitoring inputs and exercising outputs. The system setup can also be printed.

Serial Communication

The serial port can be used for printing, datalogging, modem connection, two way paging/and communication with a computer.

RS-232

Device ID	01-99
Baud Rates	300, 600, 1200, 2400, 4800, 9600, 19200
Parity	None, Odd, Even
Handshaking	None, Software, Hardware
Print Setup	Configurable print list and formatting

RS-485

Device ID	01-247
Baud Rates	300, 600, 1200, 2400, 4800, 9600, 19200
Parity	None, Odd, Even
Protocol	Modbus RTU (Half Duplex)

Data Logging

The data logger captures print list information to internal storage for approximately 1000 transactions. This information can be used for later uploading or printing. Storage format is selectable for Comma-Carriage Return or Printer formats.

Listing

CE Approved, UL/CSA Pending

Series 1900

meriam A SCOTT FETZER COMPANY

Flow Computer

Flow Inputs

Analog Input:

Accuracy: 0.01% FS at 20°C Update Rate: 4 updates/sec

Temperature, Pressure, Density / Relative Humidity Inputs

The compensation inputs usage are menu selectable for temperature, temperature 2, pressure, density/relative humidity or not used.

Calibration: Operator assisted learn mode

Operation: Ratiometric

Basic Measurement Resolution: 16 bit Update Rate: 2 updates/sec minimum

Automatic Fault detection:

Signal Over-range/under-range

Current Loop Broken

RTD short

RTD open

Reverse Polarity: No ill effects

Over-Current Limit (current input) Internally

limited to protect input to 24 VDC **Available Input Ranges**

Current: 4-20 mA, 0-20 mA

Voltage: 0-5 VDC, 0-10VDC on RH Input only

Resistance: 100 Ohms DIN RTD

100 Ohm DIN RTD (DIN 43-760, BS 1904):

Three Wire Lead Compensation

Internal RTD linearization learns ice point resistance

1 mA Excitation current with reverse

polarity protection

Temperature Resolution: 0.01°C

User Entered Stored Information (EEPROM / Nonvolatile RAM)

Transmitter Ranges, Signal Types Fluid Properties

(specific gravity, expansion factor, specific heat, viscosity, isentropic exponent, combustion heating

value, Z factor)

Units Selections (English/Metric) Language Translations (optional)

Excitation Voltage

24 VDC @ 100 mA (fault protected)

Relay Outputs

The relay outputs usage is menu assignable to (Individually for each relay) Hi/Lo Flow Rate Alarm, Hi/Lo Temperature Alarm, Hi/Lo Pressure Alarm, Pulse Output (pulse options), Wet Steam or General purpose warning (security).

Number of Relays	2 (3 optional)
Contact Style	Form C contacts
Contact Ratings	240V, 5 amp

Stored Information (ROM)

Steam Tables (saturated & superheated), 'Fluid Properties: Water, Dry Air, Humid Air, Argon, CO₂, Ethylene, Helium, Hydrogen, Nitrogen, Oxygen, Methane, Natural Gas, Propane. Additional selections for dry or humid generic gas for general use.

Real Time Clock

The Flow Computer is equipped with a non-volatile real time clock with display of time and date.

Format: 24 hour format for time Day, Month, Year for date

Analog Outputs

The analog outputs are menu assignable to correspond to the Uncompensated Volume Rate, Corrected Volume Rate, Mass Rate, Heat Rate, Temperature, Density, or Pressure.

Number of Outputs: 2

Type: Isolated Current Sourcing (shared common)

Available Ranges: 0-20 mA, 4-20 mA

(menu selectable) **Resolution:** 16 bit

Accuracy: 0.05% FS at 20°C Update Rate: 5 updates/sec

Temperature Drift: Less than 200 ppm/C

Maximum Load: 1000 ohms

Compliance Effect: Less than .05% Span

60 Hz rejection: 40 dB minimum

EMI: No effect at 3 V/M

Calibration: Operator assisted Learn Mode **Averaging:** User entry of DSP Averaging constant

to cause a smooth control action

Isolated Pulse Output

The isolated pulse output is menu assignable to Uncompensated Volume Total, Compensated Volume Total, Heat Total or Mass Total.

Pulse Output Form (menu selectable):Open Collector NPN or 24 VDC voltage pulse

Nominal On Voltage: 24 VDC Maximum Sink Current: 25 mA Maximum Source Current: 25 mA Maximum Off Voltage: 30 VDC Saturation Voltage: 0.4 VDC Pulse Duration: User selectable

Pulse output buffer: 8 bit Fault Protection Reverse polarity:

Shunt Diodes Over-current Protected Over-voltage Protected

Ordering Information

To order Meriam's Series 1900 Flow Computer custom-made to your specifications, please contact your Meriam sales representative with the following information:

- Display: Standard LCD or Optional Vacuum Fluorescent
- Power input: Standard Universal AC power (85 – 276 VAC) or 24 VDC
- Network Card: RS485/Modbus or none
- Optional Mounting: Panel, NEMA 4 Wall Mount, NEMA 12/13 Wall Mount with Clear Cover or Explosionproof (specify with or without buttons)
- Optional Outputs: 3-relays or datalogger

Specifications	
Environmental	Operating Temperature: 0 to +50°C Storage Temperature: -40 to +85°C Humidity: 0-95% Non-condensing Materials: UL, CSA, VDE approved
Display	Type: 2 lines of 20 characters Types: Backlit LCD and VFD ordering options Character Size: 0.3" nominal User selectable label descriptors and units of measure
Keypad	Keypad Type: Membrane Keypad Keypad Rating: Sealed to Nema 4 Number of keys: 16
Enclosure	Enclosure Options: Panel, Wall, Explosion Proof Size: 5.6" x 2.8" x 6.65" Depth behind panel: 6.5" including mating connector Type: DIN Materials: Plastic, UL94V-0, Flame retardant Bezel: Textured per matt finish



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.

www.meriam.com **ph:** 800.817.7849 **fax:** 216.281.0228

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 of 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")

Index

		954FI50 Neturn Wells	
0-9		942K50 Float Check Valve (standard)8	
1020 Differential Pressure Unit	58, 59	942KW50 Float Check Valve (fluid under water)8	0
10A Inline Sensor Accutube		951 Orifice Plates84, 8	5
10AA25 Clean-Out U-Type Manometer	62, 63	952 Orifice Flanges86, 8	:7
1120 Series Indicators	56, 57	953AA75 Seal Pots	0
1126P-2 Portable Indicator	56, 57	971A3 Pressure/Vacuum Variator8	0
11A Inline Sensor Accutube	83, 88, 89		
1220 Series Indicating Switches	56, 57	A	
1226X Explosion-Proof Switch	56, 57	Accutubes82, 83, 88-10	3
1500 Digital Pressure Transmitter	50, 51	Antennas (Wireless)4	3
1900 Flow Computer	116, 117		
20DAX40 Manometer	64, 65	В	
20T Single Mount Accutube	83, 90, 91	B34686 Hand Pump (pressure)	0
2110L Smart Level Gauge	48, 49	B34700 Hand Pump (pressure)	0
2110P Smart Pressure Gauge	46, 47	Battery-Powered Digital Pressure Gauges52, 5	3
21T Double Mount Accutube		Bellows Gauges56, 5	
22L Single Mount Accutube		•	
23L Double Mount Accutube		C	
24D Single Mount Accutube		Concentric Orifice Plates84, 8	35
25D Double Mount Accutube		, -	
30EBX25 Well Type Manometer		D	
30EBX50 Well Type Manometer		Device Management System	9
30EFX25 Well Type Manometer		Differential Pressure Bellows Gauges	
33KBX35 Multiple Tube Well Type Manometer.		Digital Manometer/Calibrator24, 2	
33T Low Pressure Wet Tap Accutube		DIN Rail Mount Wireless System4	
34FB2TM (English Units) Micromanometer		Division 1 Explosion-Proof Ethernet Access Point	
			. 1
34MB2TM (Metric Units) Micromanometer		Division 1 Explosion-Proof Wireless RS-232/422/485 Modem4	10
35EE Meriam Portable Digital Manometer / Cal			
37L High Pressure Wet Tap Accutube		Division 1 Explosion-Proof Wireless System4	
4-20 Milliamp Loop Calibrator		DMS	9
4010		_	
40GD10 Inclined Tube Manometer Draft Gauge		E	_
40H Single Mount Accutube		Eccentric Orifice Plates84, 8	5
40HEX35 Inclined Tube Manometer			
4150		F	
41H Double Mount Accutube	·	Fiberglass Enclosure4	
42H Single Mount Accutube		Float Check Valve 942K50 (standard)8	
43H Double Mount Accutube	·	Float Check Valve8	
50MC2	112, 113	Float Check Valve 942KW50 (fluid under water)8	
50MC2-4T	112, 113	Flow Bellows Gauges56, 5	7
50MC2-6T	112, 113		
50MC2-8T	112, 113	H	
50MH10	110, 111	Hand Pumps - B34686 (pressure)	0
50MJ10	110, 111	Hand Pumps - B34700 (vacuum)	Ю
50MK10	110, 111	Hand Pumps53, 54, 55, 8	0
50MR2	112, 113		
50MT10	109	L Control of the Cont	
50MT20	109	Laminar Flow Elements	3
50MW20	110, 111	Level Bellows Gauges56, 5	7
50MY15	112, 113	LFE	
70H Wet Tap Accutube (with RTD)		LFS-1 Flow Measurement System10	
72H Wet Tap Accutube (with RTD)		Line Traps 932 Series	

931 Series Sight Feed Bubblers80 932 Series Line Traps80

M-600KT Combo Pneumatic Calibration Pump53, 55, 81	Return Wells 934H5080
M1 Series Digital Manometer/Calibrator24, 25	RIO4000 RTD Measure and Simulate Module
M130 Thermocouple Calibrator38, 39	for Meriam MFT 4010
M2 Series Smart Manometers	Rotary Gas Meter Tester30, 31
M200-DI Wet/Wet Differential Pressure	Hotaly das Weter Tester
Smart Manometer	s
M201 Rotary Gas Meter Tester	S320 Flow Computer
-	Seal Pots 953AA75
M202 Precision Absolute Manometer	
M334 4-20 Milliamp Loop Calibrator36, 37	Segmental Orifice Plates84, 85
Manometer Accessories	Series 10A & 11A Inline Sensor Accutubes
Manometer Indicating Fluids80, 81	Series 1900 Flow Computer
Mating Cables (Wireless)	Series 20T (Single Mount) & Series 21T
Meri-Cal	(Double Mount) Accutubes83, 90, 91
MFC 4150 HART® Communicator	Series 22L (Single Mount) & 23L
MFT 4000 Pressure Modules	(Double Mount) Accutubes83, 92, 93
MFT 4005 Pressure Modules	Series 24D (Single Mount) & 25D
MFT 4010 Modular Calibrator with	(Double Mount) Accutubes83, 94, 95
HART® Communication Option8, 9	Series 33T Low Pressure Wet Tap Accutube 83, 96, 97
MFT 4010 Pressure Modules	Series 37L High Pressure Wet Tap Accutube83, 98, 99
MFT 4010 RTD Measure and Simulate Module16, 17	Series 40H – 43H Accutubes
MGF16BN Battery-Powered Digital Pressure Gauges 52, 53	Series 70H & 72H Wet Tap Accutubes (with RTD) 102, 103
MH-10KT Hydraulic Calibration Pump54, 81	Sight Feed Bubblers 931 Series80
Model 1020 Differential Pressure Unit58, 59	Smart Manometers26, 27
Model 10AA25 Clean-Out U-Type Manometer62, 63	
Model 1500 Digital Pressure Transmitter50, 51	T
Model 20DAX40 Manometer64, 65	TIO0110 Thermocouple Measurement
Model 30EBX25 Well Type Manometer	and Simulation Module
Model 30EBX25, 30EBX50, 30EFX25	Thermocouple Calibrator38, 39
Well Type Manometers	
Model 30EBX50 Well Type Manometer	V
Model 30EFX25 Well Type Manometer	VMA0055 DC Voltage/Current Measurement
Model 33KBX35 Multiple Tube	and Simulation Module
Well Type Manometer	
Model 34FB2TM (English Units) Micromanometer78, 79	w
Model 34MB2TM (Metric Units) Micromanometer	Wet/Wet Differential Pressure Smart Manometer28, 29
Model 35EE Meriam Portable Digital	Wireless Division 1 Explosion-proof Ethernet Access Point 41
Manometer / Calibrator22, 23	Wireless OEM Division 1 Explosion-Proof Enclosure
Model 40GD10 Inclined Tube Manometer Draft Gauge 76, 77	Wireless Fiberglass Enclosure41
Model 40HEX35 Inclined Tube Manometer	Wireless Division 1 Explosion-proof Wireless System
Model 951 Orifice Plates	Wireless DIN Rail Mount Wireless System42
Concentric/Segmental/Eccentric84, 85	Wireless Division 1 Explosion-proof Wireless
Model 952 Orifice Flanges	RS-232/422/485 Modem
MP-100KT Calibration Pump55, 81	Wireless Panel Mount RS-232/485 Transceiver
1001(1 Cambration 1 amp	Wireless Power Options
0	Wireless Power Supplies
OEM Division 1 Explosion-Proof Enclosure41	Wireless Antennas
Orifice Flanges86, 87	Wireless Mating Cables
Orifice Plates84, 85	Willeless Matility Cables43
P	Υ
Panel Mount RS-232/485 Transceiver42	
	Yokogawa Pressure Transmitters on 40H Accutube 104, 105
Power Options (Wireless)	

Pressure/Vacuum Variator – 971A380

Meriam Expertise



For more than 98 years, Meriam has measured success by our high level of customer satisfaction. That's why we have grown to be one of the leading sources for Smart Instrumentation, HART Communicators, Multifunction Calibrators with HART capability and a line of mechanical instrumentation for all types of industrial applications. We combine our technical expertise with our line of products to ensure that you have the right product for all of your applications.

Putting the customer first has given us recognition as a company that is one of the most highly respected in the industry. When you choose Meriam, you get access to our technical experts, product managers and local distribution channels to give you the best in products and service.

Application Specialists On-Hand

Whether you need assistance with a mechanical flow application or a MFC software question. Meriam's experts are available to help you with a multitude of application needs. Our application specialists will work with you to determine the right products to fit your specific needs.

Custom Products – Personalized Attention

Got an unusual application where a standard product won't fit your needs? We are able to design and manufacture custom products that other manufacturers are unable to do - all with great pricing and quick turnaround times.

Dedicated Product Managers

Meriam has a dedicated team of product managers to work with you on a variety of applications. Whether you are an end user, distributor or OEM - Meriam has the knowledge and resources on all product specifics - from manufacturing, testing, and quality standards to lead times and delivery.

Right in Your Own Backyard

Meriam has distributors and reps located throughout the United States, as well as globally. Our customers benefit by having a local agent to call on and on-hand stock to meet their immediate needs. Want to see first-hand if a product meets your application needs? Meriam's distribution and rep partners have demo equipment available for customers to implement and try out in their projects.

Please visit www.meriam.com to locate the distributor or rep nearest to you.

Calibration & Repair Service

At Meriam, we hold ourselves to the highest standards of accuracy. Our calibration services provide our customers with top quality calibrations that you can trust.

If, for any reason, you need a Meriam product fixed, our repair department is your source for quick service with flat rate repair pricing that gets the unit back to you and back in service. Call our experienced customer service representatives for a RMA return number to ensure proper handling of your instrument.

Standard Warranty

Meriam's standard warranty is one (1) year from the date of shipment from the factory.

Convenient Payment Options

We offer flexibility on payment terms: 30 day net with approved credit references. For fast shipment, we accept Mastercard, Visa and American Express. To place your order, or to get a customized quote, please contact Meriam today:

Phone: 800-817-7849 Fax: 216-281-0228

E-mail: sales@meriam.com

Or use the "Information Request" link on meriam.com

Meriam Expertise



Meriam Webinars

Meriam is proud to offer a series of Webinars (Online Seminars) to help you master skills on our products and their applications in the industry. All of these seminars are FREE! Dates and times are convenient and allow you to gain important info on the products and applications without taking up a lot of your valuable time.

Recent Webinars have focused on products like Accutubes and Laminar Flow Elements. Upcoming sessions will cover new products like our M1 Series Manometers and Calibrators.

The Webinar format makes it easy for you to quickly sign on and participate in our presentation while listening to the presenter from the convenience of your office. The sessions are structured to be completed within a 25 to 30 minute timeframe including a period for Q&A at the end. Copies of the presentations will be emailed to all of those who participated after the session.



CUSTOMER TESTIMONIAL

The online webinars are a great way to gain insight on products without taking up too much time.

-MIKE M. RECENT WEBINAR PARTICIPANT

Meriam Website

The Meriam website is continuously updated with useful information for your convenience. At www.meriam.com you can find a vast array of product-specific resources, including:

- Technical Bulletins
- Product Manuals (current & obsolete)
- Application Notes
- Datasheets
- DOF (Device Object Files) Downloads and Release Notes
- Product Information Sheets

You can also download the full line catalog, as well as current and past issues of the Meriam Standard. We also feature links to leading industry association websites, such as ISA and HART Communication Foundation.

Email Alerts

Stay in touch with all the happenings from Meriam though our e-mail alerts. These are messages loaded with application-specific or cost-saving tips conveniently delivered to your e-mail box.

To sign up for Meriam alerts, simply send an e-mail to sales@meriam.com and indicate that you would like to be put on our mailing list. It's that simple!

