CAM 5200

FLOWMETER FOR COMPRESSED-AIR SYSTEMS

- Easy to install
- No moving parts
- Digital display
- Milliamp and pulse outputs
- 100:1 turndown capability
- No calibration or setup required
- Complete flowmeter in one package
- Optional RS-485 output for networking

DESCRIPTION

The CAM 5200 clamps onto a pipe, with two flowsensing probes projecting into the pipe through 3/16-in. drilled holes. It seals directly to the pipe; no cutting or welding is required for installation. Because each flowmeter is made and calibrated for a specific size of pipe, the digital display indicates flow directly, with no setup or adjustment.

The meter measures flow by maintaining one probe warmer than the other. It calculates the mass velocity from the amount of heat required, and then calculates the flow on the basis of pipe area. The flow rate, in scfm, is shown on a large, four-digit display; a 4-20 mA output and a pulse output permit remote display, totalizing and data collection.

AVAILABLE SIZES			
Size (in.)	Range [a] (scfm)	Model No. for Sch 40 Steel	Model No. for Type L Copper
1/2	0.4 - 30	5200-05S	—
3/4	0.6 - 40	5200-07S	5200-07C
1	1 - 80	5200-10S	5200-10C
1-1/4	1 - 150	5200-12S	5200-12C
1-1/2	2 - 200	5200-15S	5200-15C

(a) Accuracy will be reduced when flow is outside of specified range. Milliamp scale ranges differ.

SPECIFICATIONS

Accuracy:
5 percent of reading plus one percent of full scale at air temperatures between 40 and 120 degrees F

Fluids:
Compressed air and nitrogen

Operating pressure:
15 to 170 psig for best accuracy

200 psig maximum on Sch. 40 steel and Type L copper.

Input power:
250 mA at 18 to 24 Vdc

Output resistance:
400 Ohms max.

Wetted materials:
Stainless steel, gold, thermal epoxy and Viton® (seal)

Ring material:
Aluminum

Display:
Four-digit LED display

Response time:
One second to 63 percent of final value

APPLICATION

The meter is designed for use with compressed air and nitrogen. If the meter will be used at pressures below 15 psig, consult factory about velocity limitations. The air must be free of oil, dirt that could foul the probes, and suspended water droplets. If the meter must be mounted near a compressor, isolate it from the compressor by placing it downstream of a dryer or storage tank. Each meter is calibrated for a specific size and type of pipe.

The meter is not to be used in safety or life-support applications. It should not be used as a sole means of determining required capacity of air compressors and related equipment. The meter must not be used in wet or hazardous locations.

INSTALLATION

Drilling the holes to install the meter will release some metal shavings into the pipe. When planning the installation, make sure that all downstream equipment is protected by filters, or take other precautions to ensure that shavings do not reach critical equipment or get blown out in a way that could cause injury.

For best accuracy, the meter should be installed with at least 30 diameters of straight pipe upstream and five diameters downstream. Avoid installing the meter downstream of any item that could distort or concentrate the flow, such as a partially-closed valve, a regulator, a filter or moisture separator, two closelyspaced elbows in different planes, a long-radius elbow or a curved hose. Allow at least 50 diameters of straight pipe between any such item and the meter. Select a location that meets these requirements and also provides good visibility from the plant floor. If this is not possible, consider using the remote display discussed below.

To install the meter, first shut off the supply of air to the pipe where the meter will be mounted and allow the pressure to bleed down. Clamp the drill guide firmly to the pipe, orienting it for best visibility of the meter. Drill the two holes and remove any resulting burrs from the outside of the pipe. Make sure the outside surface of the pipe is clean and smooth.

Once the pipe is prepared, remove the back halves of the rings, insert the probes into the holes in the pipe with the flow arrow pointing in the proper direction, and re-assemble the rings. Tighten the cap screws firmly and evenly so that the gaps between the halves of the rings are about equal on both sides of the pipe. If the display is upside down, remove the cover of the meter, rotate it 180 degrees, and re-install it.

MILLIAMP AND PULSE OUTPUTS

The meter has an isolated, unpowered, milliamp output. This output may, optionally, be powered from the instrument's dc supply, in which case the instrument will source a dc signal. The pulse output is an open drain, referenced to the instrument ground.

RANGES AND SCALING

The standard display is in scfm. Please contact Flowmeters.com if you require a display in other units. The published scale range of each meter is its calibrated range; the meter will continue to function, at reduced accuracy, at higher and lower flow rates. The milliamp output increases linearly from four milliamps at zero flow to 20 milliamps at a pre-determined maximum flow rate that is indicated inside the meter. The pulse output produces five pulses for each standard cubic foot of air in all meter sizes.

POWER SUPPLY

Each meter is furnished with an 18-Volt, 300 mA wallplug dc supply with a 20-foot cable. The meter may alternatively be hard wired to an 18- to 24-Volt dc supply.

ACCESSORIES

Drill Guide

The drill guide facilitates drilling the holes required for mounting the meters; a 3/16-inch drill bit and Allen wrenches to fit the screws used in the smaller meters are included.

Summing Remote Display

The summing display can be programmed to operate in any of three modes: rate display (the same flow rate shown on the meter), cumulative usage, and usage during the previous day. It can be used either as a remote readout, for situations in which the meter is not readily visible, or as a way to monitor usage over time. A three-conductor cable (not included) connects the terminal strip in the meter to the terminal strip in the remote display. The meter's plug-in power supply may be connected either at the meter itself or at the remote display.

LIMITED WARRANTY

Flowmeters.com warrants solely to the buyer that the Model 5200 Flowmeter shall be free from defects in materials and workmanship, when given normal, proper and intended usage, for three years from the date of purchase. During the warranty period, Flowmeters.com will repair or replace (at its option) any defective product at no cost to the buyer. The foregoing warranty is in lieu of any other warranty, express or implied, written or oral (including any warranty of merchantability or fitness for a particular purpose). Flowmeters.com's liability arising out ofthe manufacture, sale or supplying of the flowmeter, whether based on warranty, contract, tort or otherwise, shall not exceed the actual purchase price paid by the buyer, and in no event shall Flowmeters.com be liable to anyone for special, incidental or consequential damages.

FLOWMETERS.COM

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CAM 5400

FLOWMETER FOR COMPRESSED-AIR SYSTEMS

- Easy to install
- Digital display
- Milliamp and pulse outputs
- 100:1 turndown capability
- No calibration or setup required
- Complete flowmeter in one package
- Optional RS-485 output for networking
- Housing rotates to suit vertical or horizontal installation

DESCRIPTION

The CAM 5400 clamps onto a pipe, with two flow-sensing probes projecting into the pipe through 3/16-in. drilled holes. It seals directly to the pipe; no cutting or welding is required for installation. Because each flowmeter is made and calibrated for a specific size of pipe, the digital display indicates flow directly, with no setup or adjustment.

The meter measures flow by maintaining one probe warmer than the other. It calculates the mass velocity from the amount of heat required, and then calculates the flow on the basis of pipe area. The flow rate, in scfm, is shown on a large, four-digit display; a 4-20 mA output and a pulse output permit remote display, totalizing and data collection.

AVAILABLE SIZES			
Size (in.)	Range [a] (scfm)	Model No. for Sch 40 Steel	Model No. for Type L Copper
2	3 - 350	5400-20S	5400-20C
2.5	5 - 500	5400-25S	5400-25C
3	7 - 700	5400-30S	5400-30C
4	15 - 1200	5400-40S	5400-40C
5	20 -1500	5400-50S	–
6	30 - 2000	5400-60S	–

(a) Accuracy will be reduced when flow is outside of specified range. Milliamp scale ranges differ.

SPECIFICATIONS

Accuracy, normal range:
5 percent of reading plus one percent of full scale at air temperatures between 40 and 120 degrees F

Accuracy, extended range:
7 percent of reading from rated full scale to 150 percent of full scale, at air temperatures between 40 and 120 degrees F

Fluids:
Compressed air and nitrogen

Operating pressure:
15 to 170 psig for best accuracy

200 psig maximum on Sch. 40 steel and Type L copper.

Input power:
250 mA at 18 to 24 Vdc

Output resistance:
400 Ohms max.

Wetted materials:
Stainless steel, gold, epoxy and Viton® (seal)

Ring material:
Aluminum

Display:
Four-digit LED display

Response time:
One second to 63 percent of final value

APPLICATION

The meter is designed for use with compressed air and nitrogen. If the meter will be used at pressures below 15 psig, consult factory about velocity limitations. The air must be free of oil, dirt that could foul the probes, and suspended water droplets. If the meter must be mounted near a compressor, isolate it from the compressor by placing it downstream of a dryer or storage tank. Each meter is calibrated for a specific size and type of pipe.

The meter is not to be used in safety or life-support applications. It should not be used as a sole means of determining required capacity of air compressors and related equipment. The meter must not be used in wet or hazardous locations.

INSTALLATION

Drilling the holes to install the meter will release some metal shavings into the pipe. When planning the installation, make sure that all downstream equipment is protected by filters, or take other precautions to ensure that shavings do not reach critical equipment or get blown out in a way that could cause injury.

For best accuracy, the meter should be installed with at least 30 diameters of straight pipe upstream and five diameters downstream. Avoid installing the meter downstream of any item that could distort or concen-trate the flow, such as a partially-closed valve, a regulator, a filter or moisture separator, two closely-spaced elbows in different planes, a long-radius elbow or a curved hose. Allow at least 50 diameters of straight pipe between any such item and the meter. Select a location that meets these requirements and also provides good visibility from the plant floor. If this is not possible, consider using the remote display discussed below.

To install the meter, first shut off the supply of air to the pipe where the meter will be mounted and allow the pressure to bleed down. If necessary, loosen the small cap screws behind the display and rotate the display into the proper position for the installation. Clamp the appropriate drill guide firmly to the pipe, orienting it for best visibility of the meter. Drill the two holes and remove any resulting burrs from the outside of the pipe. Make sure the outside surface of the pipe is clean and smooth.

Once the pipe is prepared, remove the back half of the ring, insert the probes into the holes in the pipe with the marked side of the ring facing down stream, and re-assemble the ring. Tighten the cap screws firmly and evenly so that the gaps between the halves of the ring are about equal on both sides of the pipe. If the display is upside down, remove the cover of the meter, rotate it 180 degrees, and re-install it.

POWER SUPPLY

Each meter is furnished with an 18-Volt, 300 mA wall-plug dc supply for 110 V main with a 20-foot cable. For 230 V main, contact Flowmeters.com. The meter may alternatively be hard wired to an 18- to 24-Volt dc supply.

MILLIAMP AND PULSE OUTPUTS

The meter has an isolated, unpowered, milliamp output. This output may, optionally, be powered from the instrument's dc supply, in which case the instru-ment will source a dc signal. The pulse output is an open drain, referenced to the instrument ground.

RANGES AND SCALING

The standard display is in scfm. Please contact Flowmeters.com if you require a display in other units. The published scale range of each meter is its calibrated range; the meter will continue to function, at reduced accuracy, at higher and lower flow rates.The milliamp output increases linearly from four imilliamps at zero flow to 20 milliamps at a pre-determined maximum flow rate that is indicated inside the meter. The pulse output produces five pulses for each standard cubic foot of air in all meter sizes.

ACCESSORIES

Drill Guides

For pipe sizes three inches and larger, the drill guides are half rings that bolt to the back halves of the meter rings (CAM 5400-XX-DG). For the smaller sizes, a single drill guide is used over the range of sizes (CAM 5400-DG). Each of the drill guides is furnished with a 3/16 inch drill bit and a hex wrench.

Summing Remote Display

(CAM 5200-SRD)

The summing display can be programmed to operate in any of three modes: rate display (the same flow rate shown on the meter), cumulative usage, and usage during the previous day. It can be used either as a remote readout, for situations in which the meter is not readily visible, or as a way to monitor usage over time.

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