SIEMENS

SUGGESTED SPECIFICATION SITRANS FUS1010

Permanent Multifunction Clamp-On
Single Channel Transit-Time Flowmeter

The flowmeter must be a clamp-on design precluding the requirement of penetrating into the pipe. The flowmeter shall be completely microprocessor based utilizing the transit-time flow measurement technique. The flowmeter shall employ the phase detection multiple pulse transmit principle in conjunction with multiple frequency axial beam transducer technology to insure operation on liquids with solids and or bubbles. In addition, the flowmeter shall incorporate an alternate Doppler method measurement mode for highly aerated or heavy solid bearing liquids.

The flowmeter shall provide automatic transducer spacing for clamp-on transducers utilizing a Universal Mounting Frame or mounting track (ruler scales shall not be acceptable. The meter shall also provide automatic Reynolds Number and liquid sonic velocity variation compensation and live zero flow measurement. The flowmeter shall have the ability to indicate flow rate, flow velocity, total flow, signal strength, liquid sonic velocity, Reynolds Number and liquid aeration level. The flowmeter shall be equipped with an integral front panel keypad and multifunction 240 X 128 pixel LCD display. In addition, the flowmeter shall provide self and application diagnostics to isolate any fault conditions to either equipment failure or abnormal process conditions. The flowmeter shall have full HELP menu routines corresponding to all levels of programming and operation.

The flowmeter electronics shall be housed in a NEMA 4X enclosure and powered by 90-240VAC, 50-60Hz. Two isolated 4 to 20 maDC and two 0 to 5000 Hz pulse outputs proportional to flow shall be provided. The current outputs must be capable of driving a 1000-ohm resistive load. In addition, the unit shall provide two 0 to 10 volt outputs and four SPDT alarm relays assignable to flow velocity, liquid sonic velocity, signal strength or liquid aeration. An internal 1 MB datalogger shall be provided to allow storage of all measured and calculated variables and alarms. A bi-directional RS-232 connection shall be provided to allow remote programming and interrogation.

The flowmeter shall have an accuracy of ±.5 to 1% of flow over a ±40 fps flow range. Repeatability shall be ±0.15% of flow with a flow sensitivity of 0.001 fps at any flow rate including no flow conditions.

Flowmeters that employ amplitude detection/correlation routines or use a single frequency transducer design will not be acceptable. Shear mode flowmeters or meters utilizing wetted transducers or electrodes, or flow measuring techniques other than previously described will not be acceptable. By use of either transit-time or Doppler modes of operation, the flowmeter shall be capable of measuring all liquids in full sonically conductive pipes. Flowmeters that simply offer stand alone transit-time or Doppler measurement modes are not acceptable.

The furnished flowmeter shall be SITRANS FUS1010 IP 65 (NEMA 4X) or approved equal. Approval for an equivalent flowmeter will be given if the proposed flowmeter meets the specifications as established by the above and upon an actual successful demonstration of the equipment on the intended or similar application.

FUS1010SPECS SINGLE

SIEMENS

SUGGESTED SPECIFICATION SITRANS FUS1010

Permanent Multifunction Clamp-On
Dual Channel Transit-Time Flowmeter

The flowmeter must be a clamp-on design precluding the requirement of penetrating into the pipe. The flowmeter shall be completely microprocessor based utilizing the transit-time flow measurement technique. The flowmeter shall employ the phase detection multiple pulse transmit principle in conjunction with multiple frequency axial beam transducer technology to insure operation on liquids with solids and or bubbles. In addition, the flowmeter shall incorporate an alternate Doppler method measurement mode for highly aerated or heavy solid bearing liquids. The furnished flowmeter shall be of a dual channel/path design. The dual channel operating mode shall be capable of acting as two independent meters with the ability to perform math functions between the two channels (add or subtract). The dual path operating mode will eliminate the effects of flow profile distortion, cross flow or swirl errors caused by upstream interference or pumping irregularities.

The flowmeter shall provide automatic transducer spacing for clamp-on transducers utilizing a Universal Mounting Frame or mounting track (ruler scales shall not be acceptable. The meter shall also provide automatic Reynolds Number and liquid sonic velocity variation compensation and live zero flow measurement. The flowmeter shall have the ability to indicate flow rate, flow velocity, total flow, signal strength, liquid sonic velocity, Reynolds Number and liquid aeration level. The flowmeter shall be equipped with an integral front panel keypad and multifunction 240 X 128 pixel LCD display. In addition, the flowmeter shall provide self and application diagnostics to isolate any fault conditions to either equipment failure or abnormal process conditions. The flowmeter shall have full HELP menu routines corresponding to all levels of programming and operation.

The flowmeter electronics shall be housed in a NEMA 4X enclosure and powered by 90- 240VAC, 50-60Hz. Two isolated 4 to 20 maDC and two 0 to 5000 Hz pulse outputs proportional to flow shall be provided. The current outputs must be capable of driving a 1000-ohm resistive load. In addition, the unit shall provide two 0 to 10 volt outputs and four SPDT alarm relays assignable to flow velocity, liquid sonic velocity, signal strength or liquid aeration. An internal 1 MB datalogger shall be provided to allow storage of all measured and calculated variables and alarms. A bi-directional RS-232 connection shall be provided to allow remote programming and interrogation.

The flowmeter shall have an accuracy of .5 to 1% of flow over a ±40 fps flow range. Repeatability shall be ± 0.15% of flow with a flow sensitivity of 0.001 fps at any flow rate including no flow conditions.

Flowmeters that employ amplitude detection/correlation routines or use a single frequency transducer design will not be acceptable. Shear mode flowmeters or meters utilizing wetted transducers or electrodes, or flow measuring techniques other than previously described will not be acceptable.

By use of either transit-time or Doppler modes of operation, the flowmeter shall be capable of measuring all liquids in full sonically conductive pipes. Flowmeters that simply offer stand alone transit-time or Doppler measurement modes are not acceptable.

The furnished flowmeter shall be Siemens SITRANS FUS1010 IP 65 (NEMA 4X) or approved equal. Approval for an equivalent flowmeter will be given if the proposed flowmeter meets the specifications as established by the above and upon an actual successful demonstration of the equipment on the intended or similar application.

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