

## SUGGESTED SPECIFICATION SITRANS FUS1020

### Permanent Clamp-On Transit-Time Flowmeter Single Channel

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 or without the presence of solids and or bubbles.

The flowmeter shall provide automatic transducer spacing utilizing a Universal Mounting Frame or mounting track (ruler scales shall not be acceptable). The meter shall also provide automatic Reynolds Number, 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 a 2 X 16 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 electronics shall be housed in a NEMA 4 enclosure and powered by 100-240VAC. One isolated 4 to 20 maDC and one 0 to 5000 Hz pulse outputs proportional to flow shall be provided. An optional additional 4 to 20 maDC output can also be provided. The current outputs are external powered must be capable of driving a 1000-ohm resistive load. 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  $\pm 0.5\%$  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.

The furnished flowmeter shall be Siemens SITRANS FUS1020 IP65 NEMA 4 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.

FUS1020SPEC SINGLE

## SUGGESTED SPECIFICATION SITRANS FUS1020

### Permanent Clamp-On Transit-Time Flowmeter Dual Channel

The flowmeter must be a clamp-on design precluding the requirement of penetrating into the pipe. The flowmeter must have dual channel/path capability. The dual channel operating mode will allow the meter to measure two independent lines simultaneously and include math functions (addition and subtraction) of the two lines. The dual path operating mode will allow elimination of the negative effects of flow profile distortion, cross flow or swirl errors caused by upstream interference or piping irregularities. 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.

The flowmeter shall provide automatic transducer spacing utilizing a Universal Mounting Frame or mounting track (ruler scales shall not be acceptable). The meter shall also provide automatic Reynolds Number, 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 a 2 X 16 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 electronics shall be housed in a NEMA 4 enclosure and powered by 100-240VAC. Two isolated 4 to 20 mA DC outputs (one per channel) proportional to flow shall be provided. The current outputs are external powered and must be capable of driving a 1000-ohm resistive load. 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  $\pm 0.5\%$  to 1% of flow over a  $\pm 40$  fps flow range. Repeatability shall be .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.

The furnished flowmeter shall be Siemens SITRANS FUS1020 IP65 (NEMA 4) 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.

FUS1020SPEC DUAL