

# TEKSCO USA

## FORMAL SPECIFICATIONS

RE: ULTRASONIC DOPPLER FLOW METER SYSTEMS;  
COMPU-FLOW™ model "DFM-C6" V6.1

1.0 The flow meter system shall be Ultrasonic Doppler in design and provide digital signals for indicating, totalizing, and transmitting of flow rates of fluids in full pipes.

1.1 The operational specifications shall have an accuracy of: +/-2% full scale of flow, repeatability within +/- 0.1% full scale, and linearity within +/- 0.5% full scale.

1.2 The full scale ranges shall be set by screen prompted entry, selectable from the keypad. Velocity scaling shall range as 00.00 FPS English and 00.00 MPS Metric.

1.3 The system shall operate with non intrusive flow sensors, clamp-on or insertion wetted, on virtually all standard pipe materials, including but not limited to carbon steel, stainless steel, ductile iron, cast iron, FRP, PVC, fiberglass, and most lined or coated pipes. Wetted insertion sensors shall be available as an option when the pipe material prevents the transmission of acoustic signals into the liquid.

1.4 The Doppler system shall not require a spool section and shall operate on a clean straight section of pipe. With insertion wetted heads the sound conductive property of the pipe is irrelevant. Each Doppler system shall be flow loop tested prior to installation.

1.5 The system shall respond to flow rates as low as 00.10 fps and as high as 50.00 fps and when the pipe is full and the liquid contains suspended particles of at least 35 ppm @ 40 micron @ 0.2% density difference of air bubbles or undissolved solids for sonic reflectors. The system shall service pipe ID ranges from 000.125inch to 999.000 inch and 0004 to 9999 millimeters.

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1.6 The electronic flow sensing transducer shall be " Digital Signal" output proportional to flow @ 60 Hz/fps and supplied as a dual head assembly with 25 ft of flexible cable as standard with the option of up to 5000 ft of cable . No tuning shall be required and no noticeable signal loss shall be experienced due to cable length. The sensors shall be water proof to 200ft and withstand exposure to the elements. The C6 Doppler sensors shall generate the raw digital signal at the pipe. The electronics shall be Nema 4X and immune to VFD\* interference and other external noises. \*( variable frequency drive)

1.7 The transducer shall be capable of being mounted on the pipe and removed without interrupting the flow. The clamp on transducer pair shall be of the single crystal type with one sensor transmitting signal and the other receiving and designed to operate continuously on pipes at a maximum temperature not to exceed 285°F.

1.8 The transducer assembly electronics shall utilize Hybrid circuitry, be solid state in design, and crystal timed to eliminate drift. The transducer electronics shall incorporate AGC (automatic gain control) and VCLD (variable cable length driver) circuitry. The transducers shall be directly interchangeable between Compu-Flow™ C6 receivers without requiring tuning or calibration. Field splicing of the signal cable shall be permitted without requiring tuning or calibration.

1.9 The transducer assembly shall permit multiplexing in virtually any number of locations. No special tuning or calibration shall be required . The cable option of 5000 ft. shall not be compromised due to multiplexing. Each transducer assembly shall be immune to external VFD interference.

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2.0 The flow meter display circuitry shall be solid state in design and Micro-Computer driven to prevent drift. The display and transducer shall employ surge protection to minimize damage due to spikes. All internal circuits shall incorporate Carbon Base auto reset fused circuit protection. There shall be no replaceable fuses.

2.1 The display electronics shall be housed in a NEMA 4X water tight IP64 rated enclosure of Polycarbonate (or similar) material. The hardware and necessary connections shall be of the corrosion resistant variety made of stainless steel, nylon, brass, PVC, or other suitable material.

2.2 The display shall be provided with an "Echo" signal yellow LED indicator. A loss of signal will cause the light to go out and the output driven to Zero on all C6 Compu-Flow™ receiver models.

2.3 The front hinged panel shall contain the necessary controls and indicators including: On-Off switch, power on LED, Echo LED, HI/LO limit LEDs, Analog digital bar graph, alphanumeric keypad, and dual line alphanumeric LCD screen. The display shall operate between the range of +32 f and +132 f without internal heaters.

2.4 The rate meter shall consist of a 4 digit LCD and an analog digital bar graph. The totalizer shall consist of an 12 digit LCD. The necessary engineering units shall be contained in the microcomputer and accessed via the front panel mounted keyboard. Screen prompting via the LCD shall provide the necessary information to set up the program.

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2.5 The HI/LO limit alarms, 4/20mA, RS 232, Batch control outputs, and the digital bar graph shall all be set up via screen prompting and keypad entry. Range selection and decimal selection shall be all automatically controlled. Damping for the outputs shall be controlled via the Up Date Time function located on the keyboard update time feature.

2.6 The display shall be powered by wall block Module 12VDC /110VAC-220VAC, or Solar Panel via the barrier strip located on the mother board. The virtually permanent flash memory shall be integral and good for a minimum of 99 years to maintain program selection and totalizer memory in the event of a loss of power. The security feature shall be activated via the front panel keypad.

2.7 The self powered 12VDC 4/20mA output shall be proportional to flow. The maximum resistive load shall be 1000 OHMS. Output current limiting circuitry shall be included. The output terminals shall be Carbon A/R fuse protected. Both the Hi Lo Alarms and the Batch Control outputs shall provide power via 50 mA / 12VDC two wire terminals located on the motherboard barrier strip.

2.8 The output circuitry and the front panel displays shall all employ automatic flow tracking via the microcomputer. Flow averaging (up date time) and low flow cut off features are provided as standard equipment and shall be accessed via the front panel mounted keyboard.

2.9 The display shall be available in English. The screen prompting shall include both English and Metric engineering units. C6 / CLTV6.1 end