

## Isco 4230 Flow Meter - Specifications

<b>Size (HxWxD):</b>	17.0 x 11.5 x 10.5 in. (43 x 29 x 26.7 cm) (without power source)
<b>Weight:</b>	17.3 lbs (7.8 kg) (without power source)
<b>Material</b>	High-impact moulded polystyrene structural foam
<b>Enclosure:</b>	NEMA 4X (IP65)
<b>Power:</b>	12 to 14V DC, 16 mA average at 12.5V DC
<b>Typical Battery Life (printer set at 1 in./hr (2.5 cm/hr), 1 bubble per second, 15 minute purge, and continuous level reading interval)</b>	
<b>934 NiCad Battery:</b>	7 to 10 days
<b>946 Lead-Acid Battery:</b>	10 to 15 days
<b>948 Lead-Acid Battery:</b>	2 to 3 months
<b>Program Memory:</b>	Non-volatile, programmable flash. Updateable without opening enclosure.
<b>Display:</b>	Backlit LCD, 2-line, 80-character (5.5 mm high x 3.2 mm wide)
<b>Level-to-Flow Rate Conversions</b>	
<b>Weirs:</b>	V-notch, rectangular with and without end contractions, Cipolletti
<b>Flumes:</b>	Parshall, Palmer-Bowlus, Leopold-Lagco, Trapezoidal, H, HS, HL
<b>Manning Formula:</b>	Round, U-channel, rectangular, trapezoidal Data Points Four sets of 50 level-flow rate points Equation Two-term polynomial
<b>Totalizers</b>	
<b>LCD:</b>	9-digit, floating decimal point, resettable
<b>Mechanical (optional):</b>	7-digit, non-resettable
<b>Inputs and Output</b>	
<b>Rain Gauge Input:</b>	Contact closure, normally open. Resolution 0.01 or 0.004 in ( 0.25 or 0.1 mm)
<b>Parameter Inputs:</b>	pH, dissolved oxygen, conductivity, and temperature (with optional YSI 600 sonde); pH and temperature (with optional Isco 201 Parameter Module); or dissolved oxygen and temperature (with optional Isco 270 Parameter Module)
<b>Sampler Activation Conditions:</b>	Enabled, disabled, AND and OR combinations of any two of level, flow rate, rainfall, pH, DO, conductivity, and temperature
<b>Sampler Pacing Output:</b>	12V pulse
<b>Sampler Input:</b>	Event mark, bottle number
<b>Printer</b>	
<b>Recording Modes:</b>	Up to 3 graphs of level, flow rate, pH, DO, conductivity, and temperature vs time; includes totalized flow. Rainfall and sampler events (time and bottle number) are also recorded
<b>Speed:</b>	Off, 0.5, 1, 2, 4 in/hr (1.25, 2.5, 5, 10 cm/hr)
<b>Recording Span:</b>	User selectable with multiple over-ranges
<b>Resolution:</b>	1/240 of recording span
<b>Reports Printed:</b>	Flow meter program, 2 independent time interval reports, flow meter history, sampler history
<b>Interval Report</b>	Site number; time interval; total flow; minimum, maximum, and average flow rate,

<b>Contents:</b>	level, pH, DO, conductivity, and temperature, and time of occurrence; interval flow; total rainfall; number of samples, flow meter history and sampler history
<b>Character Size (HxW):</b>	0.09 x 0.07 in (2.4 x 1.7 mm)
<b>Paper:</b>	4.5 in. wide x 65 ft. (11.4 cm x 19.8 m), plain white paper, replaceable roll
<b>Ribbon:</b>	19.7 ft. (6.0 m) black nylon, replaceable
<b>Data Storage Memory</b>	
<b>Capacity:</b>	80,000 bytes (approx. 40,000 readings) divided into a maximum of 12 memory partitions. Equal to 100 days of level, rainfall, pH, DO, conductivity, and temperature readings at 15 minute intervals, plus 3,000 sample events. Optional expansion to 473,000 bytes (approx 236,500 readings)
<b>Setup and Data Retrieval:</b>	IBM PC or compatible computer with Isco Flowlink Software
<b>Communication:</b>	Direct connection, optional internal 2400 baud telephone modem with voice messaging, or optional internal short haul modem
<b>Data Retrieval (optional):</b>	Isco 581 Rapid Transfer Device (RTD)
<b>Voice Messaging (with optional internal modem):</b>	Calls up to 5 telephone numbers with programmable delay between calls, activated based on AND and OR combinations telephone of any two of level, flow rate, rainfall, pH, DO, conductivity, and temperature
<b>Analog Outputs:</b>	(optional) Up to 3 isolated internal outputs, 0 to 20 mA or 4 to 20 mA, scaleable based on level, flow rate, pH, DO, conductivity, or temperature, into a maximum of 750 ohms each
<b>Relay Outputs:</b>	2 form C relays with field selectable trip points based on flow rate (with optional High/Low Alarm Relays)
<b>Serial Output:</b>	Current status and readings, in response to command or automatically at selectable time intervals, ASCII comma separated values at 1200, 2400, 4800, or 9600 baud
<b>Storage Temperature:</b>	-40° to 140°F (-40° to 60°C)
<b>Operating Temperature:</b>	0° to 140°F (-18° to 60°C)
<b>Bubbler</b>	
<b>Range:</b>	0.1 to 10 ft (0.03 to 3.05 m)
<b>Level Measurement Accuracy (Non-linearity, repeatability, and hysteresis at 25°C (77°F). Max error (±) for indicated level range.</b>	
<b>0.1 to 5.0 ft (0.03 to 1.52 m):</b>	±0.005 ft (±0.002 m)
<b>0.1 to 7.0 ft (0.03 to 2.13 m):</b>	±0.01 ft (±0.003 m)
<b>0.1 to 10 ft (0.03 to 3.05 m):</b>	±0.035 ft (±0.011 m)
<b>Temperature Coefficient (Maximum error (±) per degree of temperature change over compensated range)</b>	
<b>For level in feet:</b>	±0.0003 x level x temperature change from 72°F
<b>For level in meters:</b>	±0.0009 x level x temperature change from 22°C
<b>Automatic Drift</b>	After a 5 minute warm-up period, zero level is corrected to ±0.002 ft. (±0.0006 m)

<b>Correction:</b>	at intervals between 2 and 15 minutes
<b>Long-Term Level Calibration Change:</b>	Typically 0.5% of reading per year
<b>Ambient Operating Temperature Range:</b>	0° to 140°F (-18° to 60°C)
<b>Compensated Temperature Range:</b>	32° to 140°F (0° to 60°C)