

+ NUFLO MC Series

Flow totalizers



+ MC Series* flow totalizers are accessories for any manufacturer of turbine flowmeters or other meters that produce a pulse to represent a quantity of fluid. The totalizer counts each pulse and applies a scaling factor to provide the total accumulation of fluid and flow rate in the users preferred units of measure in volume, mass, or energy-based units.



NUFLO MC-III EXP* explosion-proof flow totalizer.



NUFLO MC-III WP* weatherproof flow totalizer.



NUFLO MC-II* flow totalizer.



	Model	NUFLO MC-I* flow totalizer	NUFLO MC-II* flow totalizer	NUFLO MC-III PM* panel-mount flow totalizer	NUFLO MC-III WP* weatherproof flow totalizer	NUFLO MC-III EXP* explosion-proof flow totalizer	Scanner* Model 2000 flow computer
Application	Housing	Weatherproof	Weatherproof	Panel-mount	Weatherproof	Explosion-proof	Explosion-proof
	Application	Local display	Local display	Local display with outputs			
	Pressure and temperature (P&T) compensation of the liquid or gas volume	-	Fixed, manually calculated	Fixed based on constant P&T entered in NUFLO MC-III totalizer PC software or manually calculated			
	Throttling control	-	-	-	-	-	Optional proportional-integral-derivative (PID)
Certifications	Explosion proof†	-	-	-	cCSAus	cCSAus	cCSAus
	Flame proof†	-	-	-	-	ATEX/IEC	ATEX/IEC
	Intrinsically safe	cCSAus	cCSAus or ATEX/IEC	-	Class 1 Div. 2 Nonincendive	-	-
Construction	Enclosure material	Fiberglass and plastic	Plastic	Various, std. 1/4 DIN [3.62 in x 3.62 in]	Fiberglass and plastic	Epoxy-coated low copper aluminum or 316 stainless steel	
Input	Low-amplitude turbine meter	1	1	1	1	1	1, 2 optional
	Amplified square wave	-	-	-	-	-	1 optional
Mounting		Portable	Direct or optional pipe	Panel	Direct or optional pipe or wall		
Outputs	Pulse	-	Limited application	•	•	•	•
	4-20 mA	-	-	•	•	•	Optional
	Amp and square	-	-	•	•	•	-
Functions	Data logging	-	-	•	•	•	•
	K-factor entry by keypad	•	•	•	•	•	•
	Reset functions	By keypad		Option external push button, by keypad or serial communications			
	Turbine linearization	-	-	1 to 12 point			
	Adjustable input sensitivity	-	-	20-40 mV			
	Keypad password security	•	•	•	•	•	•
Power	Alkaline battery option	•	-	-	Pack	Pack	-
	Lithium battery power option	-	•	•	•	•	•
	External power	-	-	6-30 VDC			
	Loop powered 4-20 mA	-	-	•	•	•	4 wire
Communications	RS-485	-	-	1 port			
	USB	-	-	Optional (uses one 485 port)			
	Modbus®/Enron® Modbus	-	-	•	•	•	•
	FOUNDATION™ fieldbus	-	-	-	-	-	Optional
	Wireless	-	-	-	-	-	Model 2100
	PC configuration software available at no extra charge	-	-	•	•	•	•

† Certifications vary by part number. All certifications are not available in one part number. For a full list of features for each of the NUFLO MC totalizer, refer to technical data. For additional flow computer information, see separate publications by Sensia. Sensia also offers turbine electronic accessories, including preamplifiers, amplified pickup coils, and scaling circuit cards. See other associated publications.

- Not available or not applicable
• Standard feature

Specification

Display

- + 8-digit display of total
- + 6-digit display of rate (11-segment characters for easy-to-read prompts)
- + Character height: 0.3 in
- + Adjustable contrast and update period
- + User-selectable units of measurement
- + Total: bbl, galUS, L, m³, ft³, standard ft³, user-defined units (and all units ×1,000)
- + Rate: Any of the above total engineering units per day, hour, minute, or second

Calibration

- + Liquid flowmeter: User enters calibration factor of meter and selects units of measurement
- + Gas flowmeter: User enters calibration factor of meter, pressure and temperature parameters, and supercompressibility factor via user-interface software

Power supply options

- + 3.6-VDC lithium battery pack
 - Two-year life typical (main or backup power supply)
 - Transport subject to hazardous-goods restriction
- + Alkaline battery pack option (main or backup power supply) CSA approved only; not recommended for temperatures consistently below 20 degF [−7 degC]
- + External power supply (6–30 VDC) with internal battery backup
- + Loop-powered (4- to 20-mA output) with internal battery backup

Temperature range

- + Lithium battery: −40 to 158 degF [−40 to 70 degC]
- + Alkaline battery pack [CSA only]: 20 degF to 140 degF [−7 to 60 degC]
- + LCD contrast is reduced below −4 degF [−20 degC]

Communications and archive retrieval

- + RTU-mode Modbus
- + Enron Modbus
- + 16-bit slave address supported
- + Data printouts in tabular or chart formats
- + Data export to spreadsheet (.xls and .csv formats)

Inputs

Turbine meter input

- + Configurable sensitivity adjustment and low-frequency cutoff
- + Zero voltage crossing sine wave
- + Frequency range: 0–3,500 Hz

Remote reset input

- + Optically isolated
- + Supply range: 3.0–30 VDC external reset switch (option)
- + Explosion proof
- + Daily log viewing capabilities

Pulse input

- + Optically isolated
- + Voltage range: 3.0–30 VDC
- + Frequency range: 0–3,500 Hz

Outputs

Analog output

- + 4–20 mA, loop-powered (two-wire)
- + 16-bit resolution
- + Accuracy: 0.1% of full scale at 77 degF [25 degC], 50-ppm/degC temperature drift
- + Loop power: 8.0–30 VDC
- + Zero and full-scale engineering values configurable from front panel
- + Cannot be used simultaneously with amp and square output

RS-485 communications

- + Baud rates: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600 and up to 115.2K
- + Optional external communications adapter simplifies frequent local connection of a PC. Mounts on side of the enclosure, suitable for hazardous location
 - USB type (CSA approved)
 - RS-485 type (CSA and ATEX approved)

Pulse output

- + Typically scaled to match displayed units of volume measure
- + Solid-state relay
- + Output rating: 60-mA maximum at 50 VDC
- + Configurable pulse duration and scaling factor

Amp and square output

- + Zero latency preamplifier like output. Output pulses match the input pulses one for one.
- + Open-drain transistor output of turbine meter input signal
- + Output rating: 50 mA at 30 VDC
- + Cannot be used simultaneously with analog output

Certification

NUFLO MC-III EXP totalizer—aluminum housing

- + CSA approved for US and Canada
 - Class I, Div. 1, Groups B, C, D (explosion-proof) Type 4 enclosure
 - T6 temperature class
- + ATEX/IECEX approved
 - Category II, Group 2 (gas and dust)
 - Ex d IIC T6 Gb
 - Ex tD A21 IP66 T85 degC
- + CE approved
- + Complies with EMC Directive 2004/108/EC

NUFLO MC-III EXP totalizer—316 stainless steel housing

- + ATEX/IECEX approved
 - Ex db IIC T6 Gb (gas)
 - Ex tb IIIC T85 degC
- + CE approved
- + Complies with EMC Directive 2004/108/EC

NUFLO MC-III WP totalizer

- + CSA approved for US and Canada
- + Class I, Div. 2, Groups A, B, C, D
- + Type 4 enclosure
- + T5 temperature class

Interface software

- + Provided at no additional charge
- + Complete configuration
- + Real-time data
- + Downloads and exports
- + Wizard offers step-by-step calibration procedure
- + Windows® XP, 7, or 10 required

Flow archive

- + 384 daily logs
- + 768 hourly logs
- + 345 event logs
 - K-factor changes
 - Input setting changes

