

FIELD MOUNTING RATE TOTALISER

Model 202D



The 202D is field proven in thousands of installations throughout the world.

Overview

The 202D Field Mounting Rate Totaliser requires no external power and is designed to operate with turbine, positive displacement and paddlewheel flowmeters in applications such as irrigation systems and pipelines, and as a replacement for mechanical registers.

Battery, Loop or DC Powered

The standard 202D is powered by long-life lithium batteries. Alternatively, the 202D can be loop powered via an optional 4-20 mA output, or powered from a 9-28 Volts DC supply.

For installation in hazardous areas a certified intrinsically safe version is available. The intrinsic safety approvals cover both the 4-20 mA output and relay outputs, in addition to the input circuits.

Watertight Field Mounting Enclosure

The 202D Rate Totaliser is housed in a rugged yet attractive IP67 (Nema 4X) rated polycarbonate enclosure which is completely watertight.

This enables the instrument to be mounted directly on the flowmeter, panel mounted or wall mounted using a special universal bracket. A 2" pipe mounting bracket is also available.

Fully User Programmable

K-factor, decimal point positions, filter constants and time base are fully user programmable.

Rate and Totals can also be displayed in different engineering units such as gallons per minute and barrels.

Frequency to Current Conversion

The 202D loop powered Rate Totaliser makes an excellent Frequency to Current Converter particularly for low frequency inputs from positive displacement or turbine flowmeters.

Because the 202D calculates the flow rate by measuring the time interval between input pulses, it is able to provide a very stable and accurate 4-20 mA output for low frequency inputs.

Non-Linearity Correction

The 202D is available with 10 point non-linear correction.

Separate K-factors and frequency points can be programmed to compensate for changes in K-factor with flowrates.

Non-linearity correction is only recommended for applications where precise measurements are required and flowmeter calibration certificates are available.

Note that this option increases the display update rate to 1 second in battery powered versions.

Versions Available Battery Powered

The battery version of the 202D is designed for operation where external power sources are not available. It derives its power from two lithium battery packs which provide sufficient power for up to 5 years.

Low battery power condition is signalled to the operator by a message on the LCD and battery replacement is easily carried out in the field even in hazardous areas.

4-20 mA Output Loop Powered

The 4-20 mA output version draws its operating power from the 4-20 mA loop and uses lithium batteries for back-up if the 4-20 mA loop is interrupted.

The instrument provides a 2-wire re-transmission of the flow rate. Both the 4mA and 20mA points are fully programmable so that the output can span across the entire range or, alternatively, across a small section of the operating range.

DC Powered

The DC powered version will operate from an external power source between 9 and 28 Volts and draws no more than 4mA. This enables the 202D to be powered from AC mains adaptors and eliminates the need to run mains voltages in the field.

Lithium batteries provide back-up if the DC power is interrupted.

Solid State Relay Outputs

Both the 4-20 mA output version and the DC powered version are provided with two solid state relay outputs. The solid state relays provide high and low flow rate alarms or, alternatively, a pulse output and a low flow rate alarm. The outputs can sink up to 200 mA and can be used to power external relays, audible alarms or counters. The outputs are internally protected against voltage spikes caused by relays and coils.

Both outputs are separately isolated via opto isolators.

The switching points can be programmed during the set-up mode. If programmed for a pulse output, the pulse can be selected as either unscaled (raw pulse input) or scaled. The maximum pulse frequency is 500 mSec with a pulse width which is automatically set as:

1mSec if output > 50Hz
10mSec if output = 5 ...50Hz
100mSec if output < 5Hz

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Specifications Model 202D

General

Display	
Total	7 digit 10mm (0.4") high LCD (continuously powered) Note: The Resettable Total is resettable from the front panel and the Accumulated Total is displayed when the ACCUMTOT key is pressed
Rate	4 digit 8.5mm (0.33") high LCD (continuously powered)
K-factor Range	The pulses per unit of measure (eg. pulses/gallon) is programmable in the range 0.000001 to 999,999
Decimal Points	Fully programmable for Rate and Total
Time Base	Rates can be displayed in units per second, minute, hour or day
Frequency Range	0.01Hz to 10kHz
Signal Type	Switch settable for sine wave (15mV P-P minimum), open collector, reed switch or pulse
Interference	CE compliance

Physical

Operating Temp.	-20 to 60°C
Enclosure	
Dimensions	98mm (3.9") high x 152mm (6.0") wide x 43mm (1.7") deep
Protection	IP67 (Nema 4X) watertight
Cable Entry	By cable glands
Materials	Polycarbonate and ABS
Mounting Options	
Wall	Wall mount bracket
Pipe	A galvanised metal bracket enables the 202D to be attached to a 2" vertical or horizontal pipe
Panel	Two mounting brackets are provided and terminals are accessible on the rear of the enclosure. Note: The panel mount version is not watertight
Turbine Meter	Bottom and rear mounting stems are available for mounting the 202D directly on turbine flowmeters which have a 1" NPT or BSP boss

Loop Powered 4-20mA Output Version

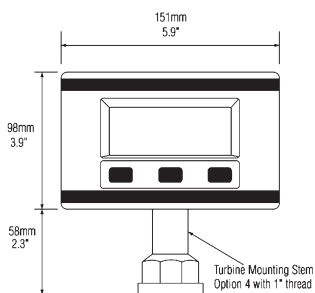
Scale	The 4mA and 20mA points are programmable
Resolutions & Linearity	0.05% of span
Accuracy	0.05% of span at 25°C
Update Time	0.5s
Connection	2 wire
Voltage Across Output	28V dc maximum
Voltage Drop	9V maximum
Memory Backup	Lithium battery

DC Powered / Alarm or Pulse Output Version

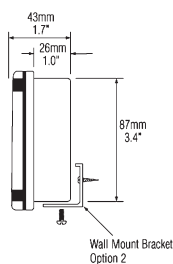
Output	2 x solid state relay output suitable for driving DC solenoids or external relays. The outputs provide fully programmable high & low flow alarms or a pulse output & low alarm
Pulse Output	Scaled or unscaled pulse output, 500Hz maximum. Pulse width depends on output frequency and varies from 100mSec to 1mSec
Switching Power	200mA, 30V dc maximum
Saturation Voltage	0.8V dc across output when in the "on" state
Isolation	Both output are separately isolated
DC Power Input	9-28V @ 4mA maximum
Memory Backup	Lithium battery

Dimensional Diagrams

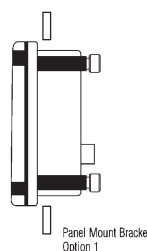
Flowmeter Mount



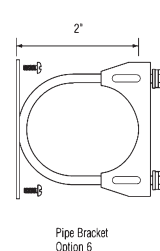
Wall Mount



Panel Mount



Pipe Mount Adaptor



Battery Powered Version

Battery Type	2 x Lithium battery packs
Battery Life	5 years

Hazardous Area Approval (Model 202Di)

Type of Approval	ATEX CSA _{US/C} SAA	II 2G EEx IIB T3 Class 1, Group C and D Ex ia IIB T6
Maximum Ambient	60°C	
Maximum Input Parameter	(For certified IS coil or other certified IS sensors which produce a pulse output.) U _o = 10.0V L _(ext) = 1.5H I _i = 20mA I _o = 9.0mA L _i = 0mH P _i = 320mW C _(ext) = 60uF U _i = 24V C _i = 0.002uF	
Maximum Output Parameters	4-20mA or Relays: U _i = 28V I _i = 93mA P _i = 653mW	

Important: Specifications are subject to change without notice.

Terminal Descriptions

Common All Models	
Number	
7	Signal Input (-)
8	Signal Input (+)
DC Power Versions	
Number	
1	DC Power 0V
2	DC Power +9 to 28V dc
4-20mA Output Versions	
Number	
1	4-20mA (-)
2	4-20mA (+)
3	Low Alarm (-)
4	Low Alarm (+)
5	High Alarm (-) or Pulse (-)
6	High Alarm (+) or Pulse (+)

Product Codes

202D	Flowrate Totaliser
Intrinsic Safety	i							Intrinsically safe Not intrinsically safe
Enclosure And Mounting	0							Wall Mounting (no glad holes) Panel Mount Wall Mounting (Standard glands) Explosionproof Enclosure (USA Only) Turbine Mount (bottom) Turbine Mount (rear) Pipe Mount
	1							
	2							
	3							
	4							
	5							
6								
Output Option	0							Battery Powered & no output option
	3							DC Powered & Alarm (Pulse Out)
	4							Loop Powered & 4-20mA out & Alarms
Hazardous Approvals			C	M	S			CSA US & Canadian Approval ATEX Approval SAA Australian Approval No Approvals
Linearisation						L		Standard (no linearization) Linearization

Typical Part Number: 202Di .40C or 202D .24

