Rate Totaliser

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 pipeline measurement, and as a replacement for mechanical registers.
Field Mounting Rate Totaliser

PROVEN IN THOUSANDS OF FIELD INSTALLATIONS THROUGHOUT THE WORLD.

The 202D is a high accuracy, intrinsically safe Rate Totaliser designed to operate with digital output flowmeters. Having an IP67 weatherproof case, new tactile keyboard and various mounting options, the 202D is perfect for the most arduous of installations.

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 4-20mA output, or powered from a 9-28 VDC supply.

The intrinsic safety approvals cover both the 4-20mA 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 51mm (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 any engineering units such as litres per minute and barrels.

Flowmetrics’s unique magnet access strip allows the 202D to be re-configured in hazardous areas without opening the enclosure. A great benefit in reducing production shutdown periods and improving maintenance efficiency times.

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 4-20mA output for low frequency inputs.

Non-linearity Correction

The 202D features 10-point non-linear correction as standard. Separate K-factors and frequency points can be programmed to compensate for changes in K-factor with flowrates. Non-linearity correction is 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.

Intrinsic Safety

The 202D is certified as intrinsically safe to European ATEX/IECEx standards, and CSA US/C standards for both the USA and Canada, see specification for details.

DC Powered

The DC powered version will operate from an external power source between 9 and 28 Volts DC 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 4-20mA 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 200mA 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 500mSec with a pulse width which is automatically set as:

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

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 3 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.

4-20mA Output Loop Powered

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

Display

Type: LCD display
Total: 7 digit 10mm (0.4"") high LCD (continuously powered). Note: The Reset Total is resettable from the front panel and the Accumulated Total is displayed when the ACCUM TOT key is pressed.
Rate: 4 digit 8.5mm (0.33"") high LCD (continuously powered)
K-factor Range: The pulses per unit of measure (e.g. 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: 0.01 Hz to 10 Hz
Signal Type: Switch settable for sine wave (15mV P-P minimum), open collector, reed switch or pulse
Interference: CE compliance

Physical

Operating Temperature: -20 to +60°C. -4 to +140°F
Enclosure
Dimensions: 98mm (3.9") high x 151mm (5.9") wide x 43mm (1.7") deep
Protection: IP67 (Nema 4X) watertight
Cable Entry: By cable glands
Materials: Polycarbonate and ABS

Mounting Options
Wall: Universal wall mounting bracket
Pipe: A galvanized metal bracket enables the 202D to be attached to a 51 mm (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

Battery Powered Version

Battery Type: 2 x Lithium battery packs
Battery Life: 5 years

Loop Powered 4-20mA Output Version

Scale: The 4mA and 20mA points are programmable
Resolution & Linearity: 0.05% of span
Accuracy: 0.05% of span at 25°C
Update Time: 0.3s
Connection: 2-wire
Voltage Across Output: 28Vdc maximum
Voltage Drop: 9V maximum
Memory Backup: Lithium battery

DC Powered / Alarm or Pulse Output Version

Outputs: 2 x solid state relay outputs 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, 30Vdc maximum
Saturation Voltage: 0.9Vdc across outputs when in the “on” state
Isolation: Both outputs are separately isolated
DC Power Input: 9-28V @ 4mA maximum
Memory Backup: Lithium battery

Hazardous Area Approval

Type of Approval:
- ATEX Rating: II 2G Ex ia IIB T4 Ga
- IECEx Rating: Ex ia IIB T4 Ga
- CSA us/c Rating: Class I, Group C & D

Intrinsically Safe Parameters

Maximum Ambient: 80°C (+140°F)
Maximum Input Parameters:
(For certified IS coil or other certified IS sensors which produce a pulse output)
Uo = 10.0V Ileak = 1.5mA II = 20mA
Io = 9.0mA LI = 0mA PI = 320mW
Cl(2X) = 60uf UI = 24V CI = 0.002uf
Note: Devices such as reed switches, which can be classified as “Simple Apparatus” as defined in the IECEx standard EN60079, can be connected to the Model 2020 without additional certification:
Maximum Output Parameters:
4-20mA or Relays: 28V 20mA II = 93mA PI = 653mW

Important: Specifications are subject to change without notice.

http://www.flowmetrics.com
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### TERMINAL DESCRIPTIONS

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<tr>
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<tr>
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<td><strong>Description</strong></td>
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<tr>
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<td>DC Power 0 Volts</td>
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<td>2</td>
<td>DC Power +9 to 28Vdc</td>
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<tr>
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<td>4-20mA (+)</td>
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<td>3</td>
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<td>4</td>
<td>Low Alarm (+)</td>
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<tr>
<td>5</td>
<td>High Alarm (-) or Pulse (-)</td>
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<tr>
<td>6</td>
<td>High Alarm (+) or Pulse (+)</td>
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### PRODUCT CODES

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<tr>
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<td>Panel Mounting</td>
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<tr>
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<td>Wall Mounting (standard glands)</td>
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<td>Turbine Mounting (stem bottom)</td>
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<td>2</td>
<td>Pipe Mounting</td>
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<tr>
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<tr>
<td>4</td>
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*Note: Cable glands not included*