



LEVEL MEASUREMENT & CONTROL SOLUTIONS

RATE OF FLOW INDICATOR-TOTALISER SERIES 191-R

Rate of flow Indicator-Totaliser, Series 191-R, accepts a 4-20mA signal proportional to rate of flow from a flow sensor or rise of head in the stilling well of an open channel flowmeter. Any of the following instruments can be used for obtaining rate of flow / rise of head signal.

1. Open Channel Flowmeter, Series 191-P.
2. Capacitance type level transmitter, Series 103.
3. RF Admittance type level transmitter, Series 106.
4. Flow transmitter of any make with 4-20mA output proportional to flow.

The rate of flow and cumulative flow are displayed on two separate indicators. The resetable cumulative flow indicator can also be preset to generate alarm based on total flow volume. An optional recorder can be connected to the current output (0-20mA/4-20mA) for obtaining flow history record.

OPERATION

The Rate of Flow Indicator-Totaliser treats the input signal in two different ways depending on whether it is proportional to head rise or rate of flow. If it is proportional to head rise, the signal is processed in a lineariser circuit which is an analog processor for implamentation of the flow equation of the weir/flume or any other hydraulic flow measurement structure. For example, in case of Parshall flume the equation is,

$$Q = K (H)^n$$

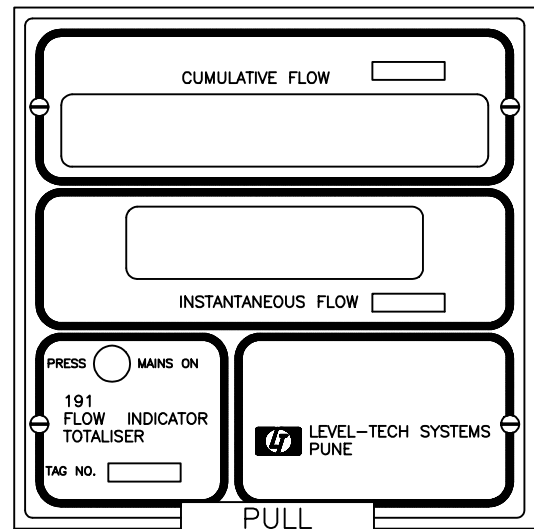
where, Q = Flow rate

K = Constant for measuring device

H = Headrise in stilling well

n = Exponent variable ($0.5 < n < 1.0$)

Output of the lineariser is a signal proportional to rate of flow. If the input is proportional to rate of flow the lineariser function is disabled. This rate of flow is indicated on the "Instantaneous Flow" display (seven segment LED display). It is integrated to obtain "Cumulative flow" which is displayed on a 6 digit resetable electromagnetic counter or 8 digit 7 segment LED display. The latter version has a battery back up for saving the cumulative flow information in case of power failure. For batch totalising applications, a 6 digit electronic counter with up/down counting and set/reset pushbuttons is provided. With the help of tamper proof thumb wheel switches mounted inside the unit, user can preset the Integrated flow alarm which has two c/o contacts. The alarm setpoint is factory set as fail safe high/low as per client's requirement. In fail



safe high mode the relay deenergises when total flow exceeds the set value and vice-versa for fail safe low. The accuracy of the instrument is largely dependent on the accuracy of the sensor used for measuring the flow rate or head rise in still well.

SPECIFICATIONS

Display	: Instantaneous flow 3 1/2 \ 4 1/2 digit 7 segment LED display (12.5 mm) in desired units. Cumulative flow 6 digit electromagnetic counter (resetable). OR 8 digit 7 segment LED display with battery backup. Batch totaliser 6 digit 7 segment LED display with oncard battery backup, count up/down facility and set/reset pushbuttons.
Input	: Rate of flow/headrise 4-20 mA (Input resistance = 250 Ω)
Output	: Non isolated 0-20 mA \ 4-20 mA proportional to flow rate. Cumulative flow alarm - 1 c/o contacts, 2 A @ 240 VAC (Resistive)
Accuracy	: $\pm 1\%$ of FSD.
Power supply	: 115 / 230 $\pm 10\%$ VAC, 50 Hz, 1 ϕ .
Mounting	: Flush panel.
Connections	: At rear of the unit.
Cable	: 2 core, 1.5 mm ² copper (For signal). 3 core, 1.5 mm ² copper (For power).
Weight	: 4 Kgs. Approximately.

ORDERING CODE

1 9 1 - R

MODEL NUMBER

FLOW INDICATOR

3 1/2 digit LED - 3

4 1/2 digit LED - 4

TOTALISER

6 digit electromagnetic counter - 1

8 digit electronic counter - 2

6 digit electronic batch totaliser - 3

MOUNTING

Flush panel - F

POWER SUPPLY

1 - 115 VAC, 50 Hz, 1 ϕ .

2 - 240 VAC, 50 Hz, 1 ϕ .

ALARM¹

N - No alarm

L - FSL

H - FSH

OUTPUT(NON-ISOLATED)

0 - 0-20 mA

4 - 4-20 mA

TYPE^{2,3}

L - With lineariser

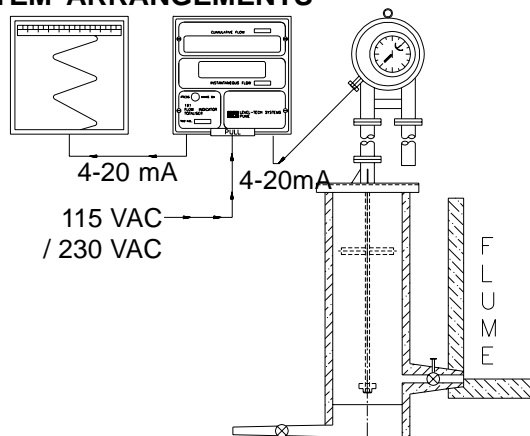
W - Without lineariser.

Note : 1. Option " Alarm " is only for Electronic counter. FSH / FSL options are factory set.

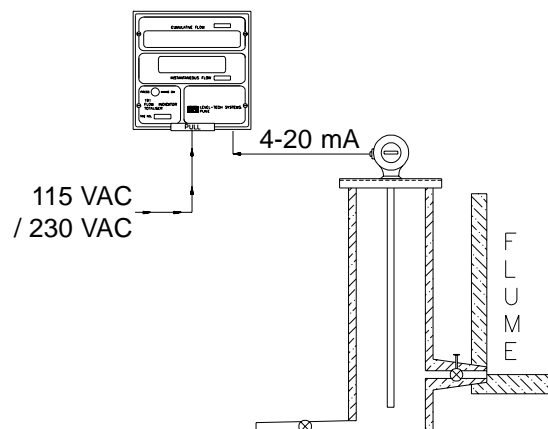
2. " Without lineariser " option is useful when input is 4-20 mA proportional to flow rate.

3. For "With Lineariser" option, please specify the values of K and n for your flow measurement system.

SYSTEM ARRANGEMENTS

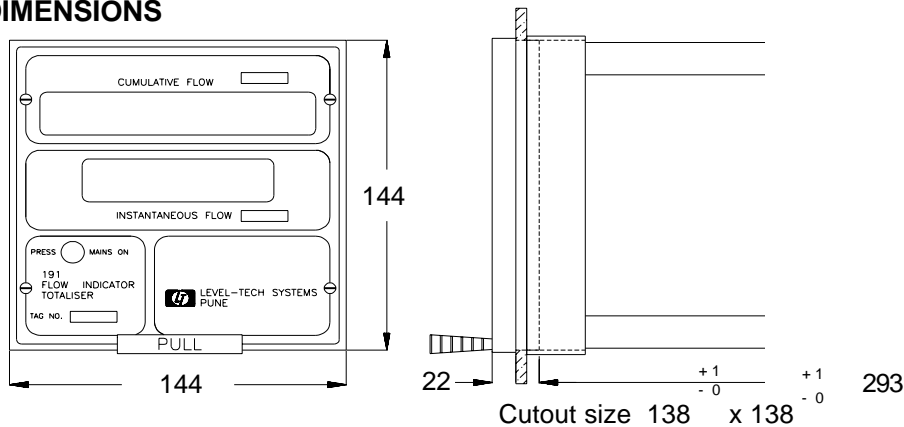


Recorder Indicator Totaliser Local Indicator Transmitter



Indicator Totaliser Capacitance Type Level Transmitter

DIMENSIONS



Cutout size 138 x 138

*** Continuous developments may necessitate changes without notice.

LF-191-0802 R 03 03/99

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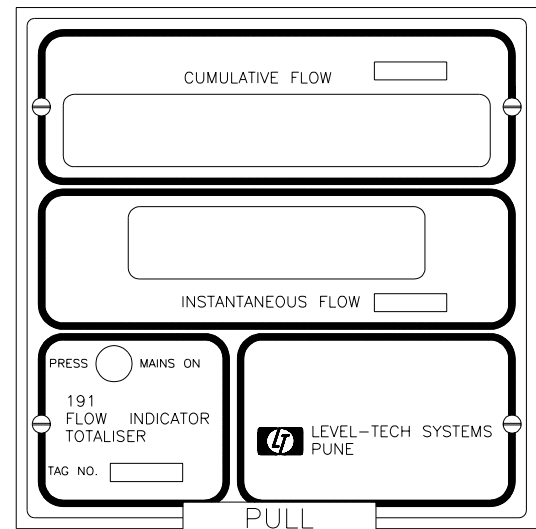
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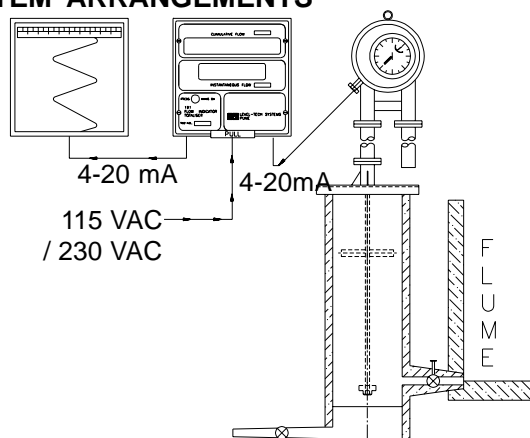
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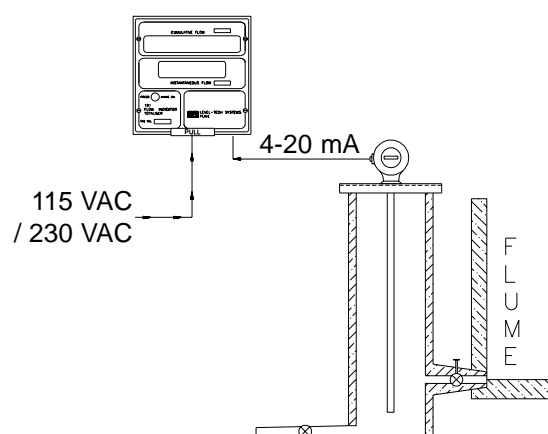
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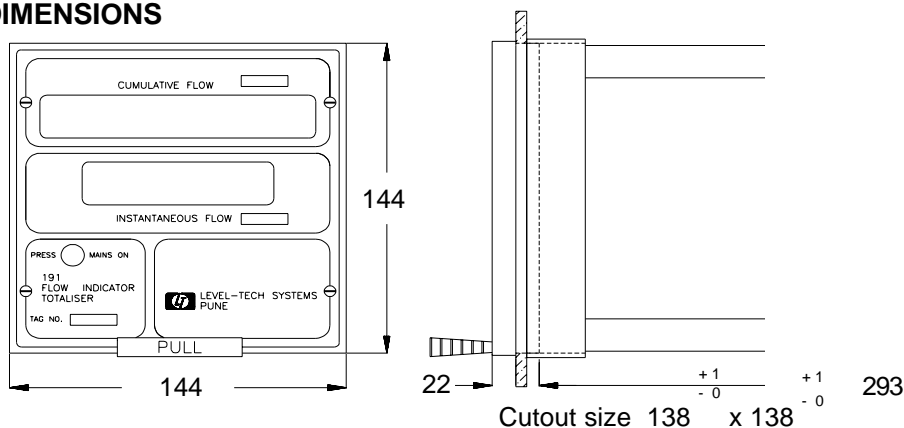


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