



## Electronic Instrumentation

### Model 1104A Pulse to Analog Converter Model 1104AR Pulse to Analog Converter with Rate of Flow/Totalizer

#### Description

The Models 1104A and 1104AR convert pulses from meters with electronic outputs to a 4-20 ma signal. It also provides the 12 volts of DC power when required by the meter's electronic transmitting register. This instrument has a number of options available: a second analog output (Option K), a retransmitting relay (Option C1), and a pulsed output (Option B). Also available are a programmable pulsed output (Option Bb) and a programmable flow rate output (Option L).

The Model 1104AR has an electronic readout in the door that displays both the total consumed and the flow rate on an eight digit transmissive Red LCD backlighted 0.46" display. (For outdoor or high ambient light conditions reflective readouts are available at the time of order). A single display indicates flow rate designated by an R on the left side of the display. The display can be toggled manually with the front panel SELECT switch to show the total consumed. There are two (2) totalizers available; typically one is programmed to be reset with the front panel RESET button. It is designated with a lower case b on the left side of the display. The second totalizer is usually set to indicate the total consumed. This totalizer display is blank on the left side. The totalizer can be set to both be resettable or both non-reset. They can also indicate different values such as one set to GALLONS and the second set to CUBIC FEET. IMPERIAL GALLONS and CUBIC METERS are common pairs. Although all programming can be performed in the field, it may be specified when the order is placed. The display may be left to show any of the readouts continuously or may be set to automatically toggle between the three (3) displays.

The Model 1104A front panel is blank.

#### ENCLOSURE

NEMA4X - a wall mountable 6"x 6"x 4" plastic enclosure.

#### FRONT PANEL

Model 1104A - Blank

Model 1104AR - 8-digit RED LCD with 0.46" display.

#### PULSE INDICATOR

A red LED, located at the bottom right side of the PC board, display each pulse received from the meter.

#### POWER INDICATOR

A red LED, located at the top of the PC board, indicates the instrument's DC power supply is functional.

#### Outputs

##### 4-20 ma Proportional Output

Both instruments have a 4 - 20 ma DC output proportional to the flow rate through the metering device. This signal has the capability of driving external equipment with impedances from 0 to 500 ohms without recalibration. The output is powered by the internal supply and MUST NOT be connected to a powered loop.



#### Options

##### OPTION B - PULSED OUTPUT\*

A 50 millisecond SPDT switch output that is factored to represent specific units of measure. Contacts rated 5 amps, resistive, 24 VDC or 3 amps, resistive, 117 VAC.

##### OPTION Bb - PROGRAMMABLE PULSED OUTPUT\*

A front panel programmable SPDT contact closure rated at 1 amp 30 VDC resistive; or 0.3 amps at 125 VAC resistive that may be set to smaller increments than option B without option I. Only available with the 1104AR, uses one of the electronic totalizers available on the readout. Output pulse width can be set between 0.01 and 99.99 seconds.

##### OPTION C1 - KEYING CONTACT

A SPST mercury-wetted contact closure (bounce free rated 1 amp 24 VDC or 0.1 amp at 117 VAC, all resistive loads). Output is synchronous with the input to the instrument. Used to retransmit meter pulses to other instruments or equipment.

##### OPTION K - 4-20 MA PROPORTIONAL OUTPUT

A second 4-20 ma DC signal proportional to the flow rate.

##### OPTION L - FLOW ALARM OUTPUT\*

A SPDT Contact closure that is actuated when the flow rate exceeds a preset limit. Flow rate limit is programmable from the front panel. Only available with the 1104AR. Rating are the same as those for option Bb.

##### OPTION TT - SLOT SENSOR AMPLIFIER

For use with two wire systems where intrinsic safety is required and current is limited.

\* Only one option B, Bb or L can be specified.

## Specifications

<b>INPUT SIGNALS - GENERAL</b>	Input frequency (full scale): 1-1000 Hz Maximum loop resistance: 40 ohms Duty cycle: 50/50 $\pm$ 20%
<b>CONTACT CLOSURE INPUT</b>	Type: SPST (contact bounce less than 5 ms) Interrupting current: 50 ma (max.)
<b>SOLID STATE</b>	An open collector design conforming to switch specifications listed above.
<b>ELECTRICAL</b>	117 VAC $\pm$ 10%, 60 Hz, 1 Phase Power Consumption: 15 VA (watts), maximum
<b>ENVIRONMENTAL CONDITIONS</b>	Ambient Temperature: 0° F to 120° F Relative Humidity: Non-condensating

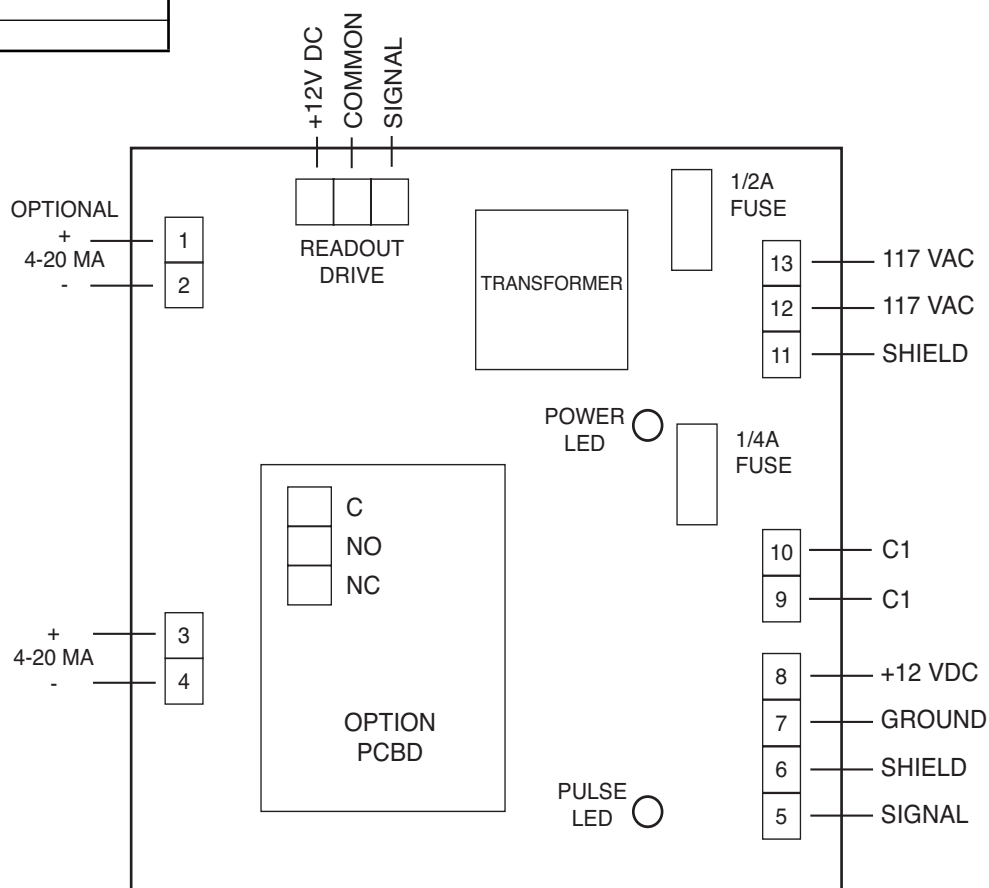
## Physical Dimensions

<b>LENGTH</b>	Length 6" (15.5 cm)
<b>HEIGHT</b>	Height 4" (10 cm)
<b>WIDTH</b>	Width 6" (15.5 cm)
<b>WEIGHT</b>	Weight 2 lbs 4 oz (1 Kg)

## Connections

TERM #	FUNCTION
1	+ 4-20 ma Opt
2	- 4-20 ma Opt
3	+ 4-20 ma
4	- 4-20 ma
5	Meter Signal
6	Shield
7	Common
8	+ 12 VDC
9	C1
10	C1
11	Ground
12	117 VAC
13	117 VAC
C	Common
NO	Normally Open
NC	Normally Closed

**CAUTION:** DO NOT connect the 4-20 ma output into a powered loop.



**AUTHORIZED SENSUS DISTRIBUTOR**



P.O. Box 487 • 450 North Gallatin Avenue  
Uniontown, PA 15401

1-800-METER-IT • 1-800-638-3748

Fax: Direct to Factory

Local: 724-439-7729 • Toll Free: 1-800-888-2403

www.sensus.com (select "North America Water")

Email: h2oinfo@sensus.com