API SUM xxx — Strain Gauge Summing Assembly

Individual Excitation & Trim

Input: *Up to 4 Strain Gauges or Load Cells*
Output: *Use with API 4058 G or API 4059 G*

- ***Sums up to 4 Strain Gauges or Load Cells***
- ***Available with Field-Rangeable Signal Conditioner***
- ***4 Excitation and Signal Trim Potentiometers***
- ***Switch for Internal or External Excitation Voltage***
- ***Optional Stainless Steel NEMA 4X Enclosure***

LIFETIME WARRANTY

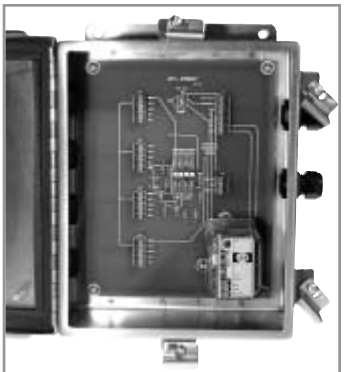


API SUM 000

Applications

- **Platform Scales & Weighing systems**
- **Easy Setup & Adjustment of Load Cells**
- **Easy Summation of Multiple Strain Gauges**





API SUM 125

Board Specifications

Input
1 to 4 strain gauges, bridges, or load cells
4 switches to enable or disable individual strain gauges

Strain Gauge Connections
Individual terminal blocks for up to 4 strain gauges with provisions for signal (+), signal (–), signal shield, excitation (+), and excitation (–)

Strain Gauge Trim Adjustment
4 multiturn potentiometers to adjust output of each strain gauge

Excitation Supply
Switch to select internal (with **API 4058** or **API 4059**) or customer-provided external excitation supply
Terminals provided for connecting external excitation

Excitation Supply Adjustment
4 multiturn potentiometers to adjust excitation voltage for each strain gauge to compensate for lead variations

Signal Conditioner Socket
Standard 11-pin socket. See other side for pin-out diagram.

Output Connection
Signal (+) and signal (–) terminals for combined output signal

Power Connection
Terminals for AC or DC external power and ground

Specifications with 4058 or 4059

Power
Standard: 115 VAC, 2.5 Watts maximum
A230 option: 230 VAC ±10%, 50/60 Hz, 2.5 W max.
D option: 9-30 VDC, 3 W typical with 4 load cells

Strain Gauge Excitation Supply
Field-rangeable from 1 to 10 VDC

Strain Gauge Sensitivity
Field-rangeable from 0.5 mV/V up to 120 mV/V

Strain Gauge Signal
Field-rangeable from 5 mVDC to 1200 mVDC with the API 4058 G
Field-rangeable from 5 mVDC to 400 mVDC with the API 4059 G

Outputs
Field-rangeable DC voltage or current
DC voltages from –10 VDC to +10 VDC
DC currents up to 20 mADC at 20 VDC compliance

Dimensions

Board Only
6.85" wide x 8.75" high x 0.7" deep

Signal Conditioner and Board
6.85" wide x 8.75" high x 3.75" deep

316 Stainless Steel NEMA 4X Enclosure
10.5" wide x 11.5" high x 4.25" deep

Models and Options

Common **API-SUM xxx** configurations are listed below. Consult factory for special configurations to meet your requirements.

The optional NEMA 4X enclosure is made from heavy gauge 316 stainless steel with a gasketed door, full-length hinge, and 4 screw clamps. Water-tight cable glands are provided for wiring connections.

API SUM 000
Summing assembly board only for applications where no on-board signal conditioning or enclosure is required. Customer is responsible for proper installation inside a protective enclosure.

API SUM 025
Summing assembly board with **API 4059** strain gauge signal conditioner. For for installation in an existing or customer supplied enclosure. Customer is responsible for proper installation inside a protective enclosure.

API SUM 100
Summing assembly board only in the 316 SS NEMA 4X enclosure. No signal conditioner included. Board is pre-mounted in enclosure.

API SUM 125
Summing assembly board with **API 4059** strain gauge signal conditioner in the 316 SS NEMA 4X enclosure. For applications where a complete assembly is required. Board and module are pre-mounted in the enclosure.

ABSOLUTE PROCESS INSTRUMENTS, Inc.
Mod-tronic Instruments Limited
Tel: 905 457-6322 **Fax: 905 457-4716**
Toll Free: 800 794-5883
www.mod-tronic.com

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API SUM Strain Gauge Summing Assembly

FUNCTIONAL DESCRIPTION

The API-SUM xxx strain gauge summing assembly consists of a sum board and an optional, field-rangeable strain gauge signal conditioner that plugs into an existing socket on the board.

The board will accept up to four 350 Ω (or greater) strain gauges (load cells) and provide a DC voltage or current output proportional to the sum of the active strain gauges.

The optional strain gauge signal conditioner provides a stable source of excitation (field-rangeable from 1 to 10 VDC) sufficient to power up to four 350 Ω strain gauges. The signal conditioner can also be field-ranged for input sensitivities from 0.5 to 120 mV/V (signals up to 1200 mVDC), DC voltage outputs up to ±10 VDC or DC current outputs up to 20 mADC. An offset adjustment on the signal conditioner allows the user to cancel or tare non-zero deadweights in the application.

UNIQUE FEATURES

API exclusive features four excitation trim potentiometers, four signal trim potentiometers, a switch to select internal or external excitation voltage and switches to activate or deactivate individual load cells.

These features allow easy setup, testing, and calibration of many types of weighing systems.

MOUNTING

The API-SUM xxx board can be provided without an enclosure for customer mounting or pre-mounted in a stainless steel NEMA 4X enclosure with water tight cable glands and a hinged door.

OPERATION

The API-SUM xxx assembly using an optional, field-rangeable strain gauge signal conditioner provides an excitation supply to each strain gauge, receives the resulting mVDC signal back from each strain gauge, sums these signals and provides a single DC voltage or current output in proportion to this sum.

WIRING

For detailed instructions refer to both the API-SUM xxx instruction manual and the strain gauge signal conditioner data sheet.

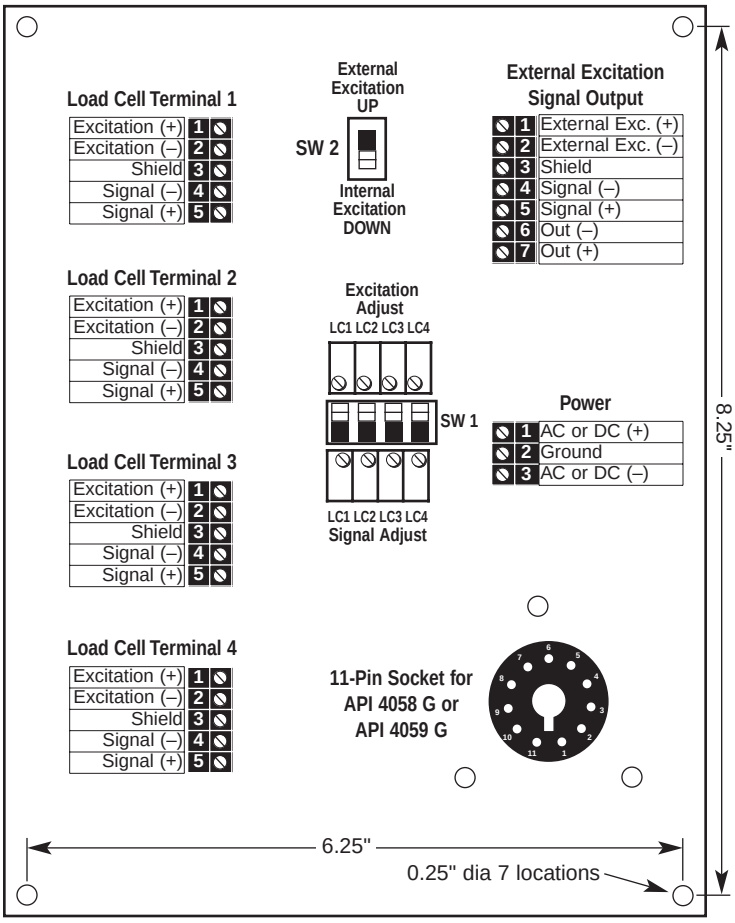
The sum board includes several terminal blocks for wiring the four load cells, AC or DC power, DC voltage or current output, external excitation and signal output. Separate excitation and signal trim pots are used for individual fine-tuning of each strain gauge. Slide switches allow each strain gauge to be switched in or out of the circuit as required. Another slide switch allows switching between internal and external excitation supply.

CALIBRATION

If the optional signal conditioner is being used, it must first be calibrated to the proper excitation voltage, input sensitivity and DC voltage or current output. These parameters are dependent upon the specifications of the strain gauges being used as well as the desired process output.

If no signal conditioner is being used, ensure that the external excitation switch position is selected and wired accordingly.

1. Complete all wiring and module calibration.
2. Turn each Excitation Trim potentiometer fully clockwise.
3. Measure the excitation voltage for each strain gauge. Adjust as necessary to equalize the voltages.
4. Apply a known weight sequentially over each strain gauge and measure the sensitivity voltage of each strain gauge being used. Record these readings.
5. Again apply the known weight over each strain gauge and adjust the Signal Trim potentiometer for that cell so that the meter reads the same as the lowest value recorded.
6. Finally, if used, fine tune the offset, zero and span of the signal conditioner as required.



Board Dimensions: 6.85" W x 8.75" high x 0.7" deep
Board Material Thickness: 0.094"

API maintains a constant effort to upgrade and improve its products. Specifications are subject to change without notice. Consult factory for your specific requirements.

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