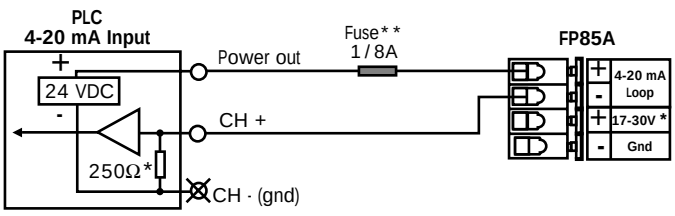
OMEGA FP85A Flow Transmitter Instructions

CAUTION!
Remove power to unit before wiring input and output connections.

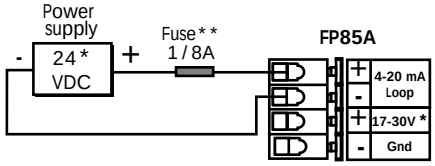
1. Loop/System Power Connections

1.1 2-Wire operation (for OMEGA FP-5200, FP-5300, FP-6000, FP-850X flow sensors).

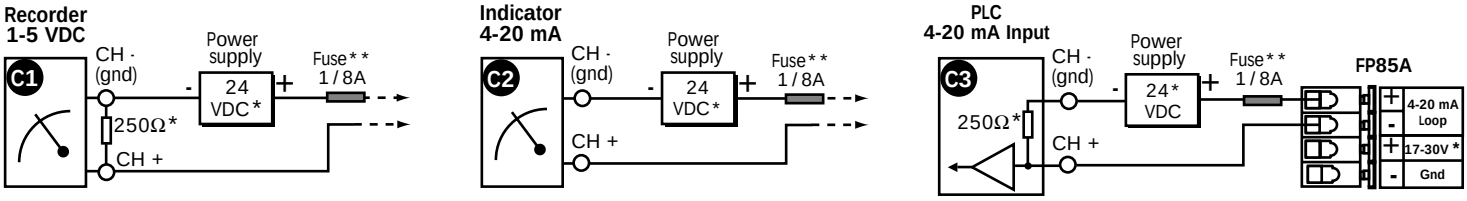
A. Ground referenced PLC **with internal** transmitter power supply



B. Power connection for display use only



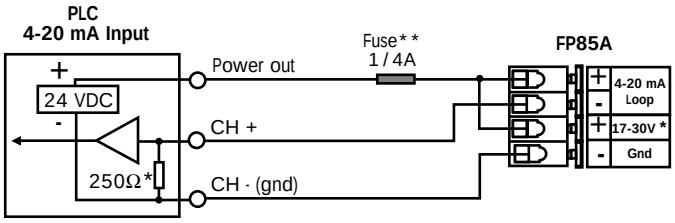
C. 1 to 5 VDC recorder (C1), 4 to 20 mA indicator (C2), or ground referenced PLC (C3) connections **without internal** transmitter power supply



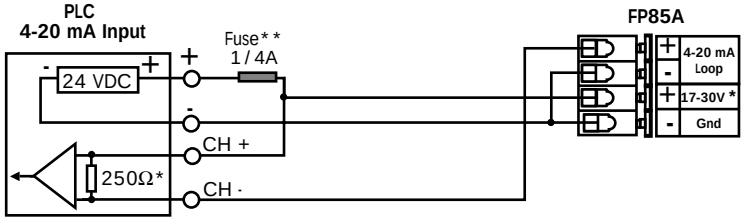
*Refer to maximum loop impedance specification for minimum operating voltage requirements (section 10).
**1/8A fuse recommended (customer supplied)

1.2 3-Wire operation (for OMEGA FP-2541 flow sensors). This wiring is required for powered flow sensors that consume more than 1.5 mA DC current.

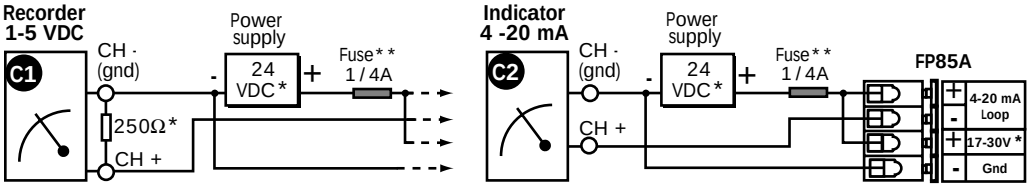
A. Ground referenced PLC **with internal** transmitter power supply



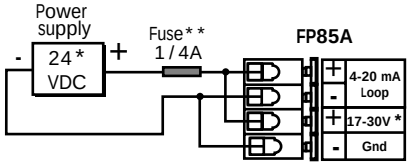
B. Differential input PLC **with internal** transmitter power supply



C. 1 to 5 VDC recorder (C1) and 4 to 20 mA indicator (C2) connections **without internal** transmitter power supply



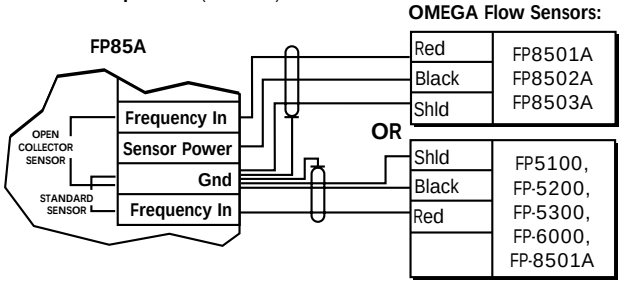
D. Power connection for display use only



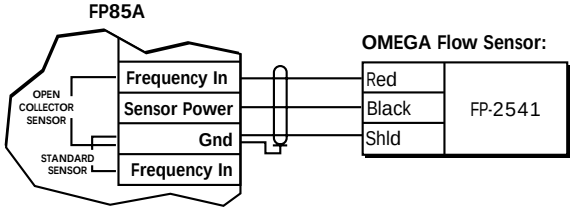
*Refer to maximum loop impedance specification for minimum operating voltage requirements (section 10).
**1/4 A fuse recommended (customer supplied).

2. Compatible Sensor Connections

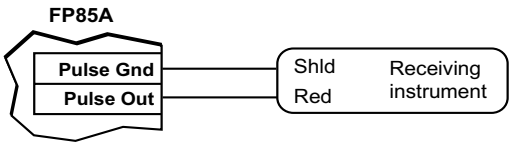
2.1 2-Wire Operation (sec. 1.1)

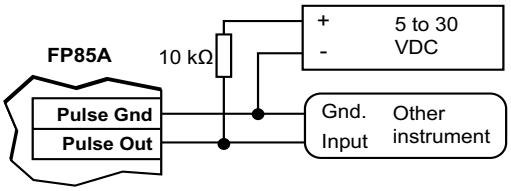


2.2 3-Wire Operation (sec. 1.2)



3. Pulse Output Wiring

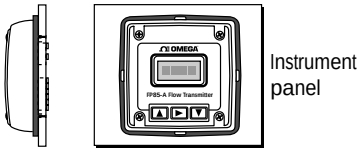




4. Installation Options

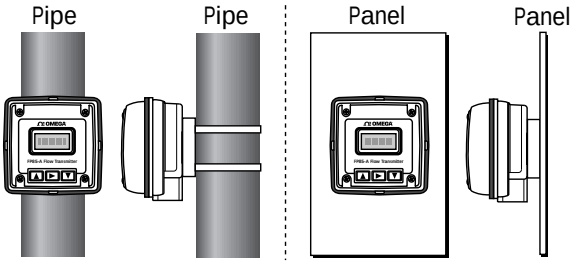
4.1 Standard Panel Mount

- Panel cutout template / instructions (included).



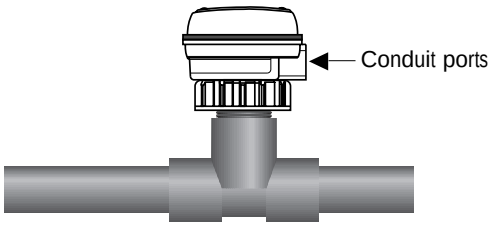
4.2 Optional FP85UNM Universal Mounting Kit

- NPT and DIN conduit port kits available (see section 4.3).
- See section 9 for ordering options.

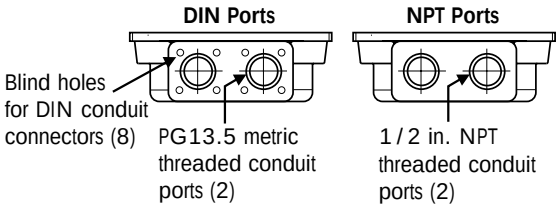


4.3 Optional FP85NM Integral Mounting Kit

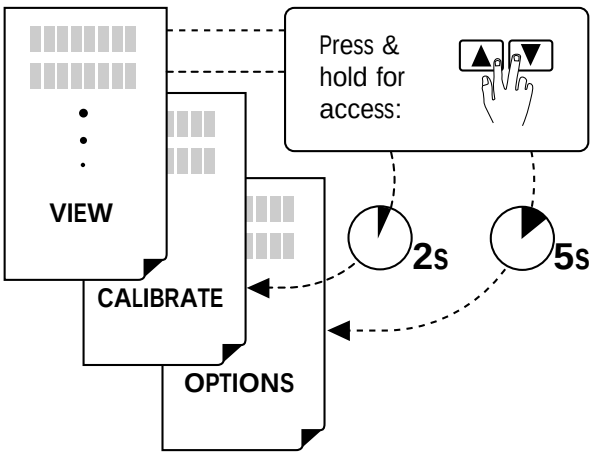
- NPT and DIN conduit port kits available.
- Compatible with FP850X flow sensors (only).
- Flow sensor and fitting purchased separately (see section 9).



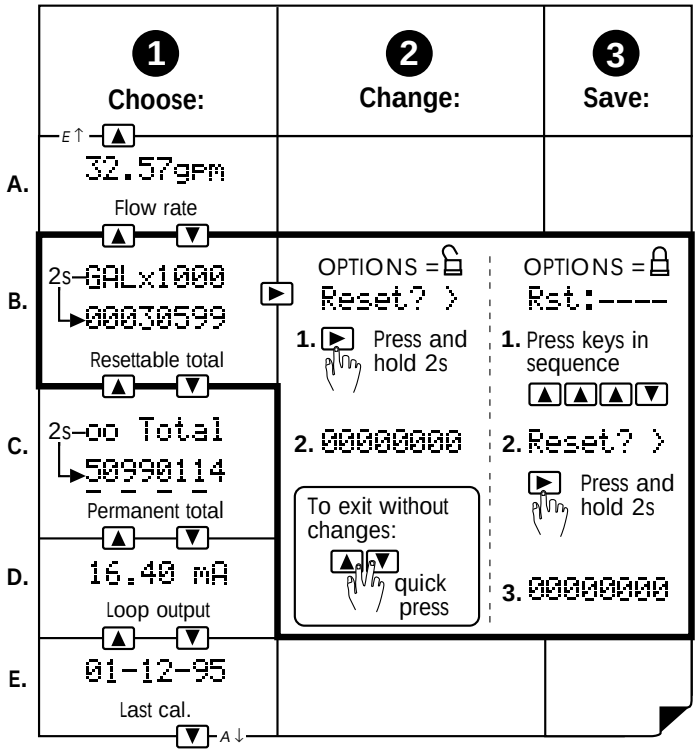
Conduit Port Options



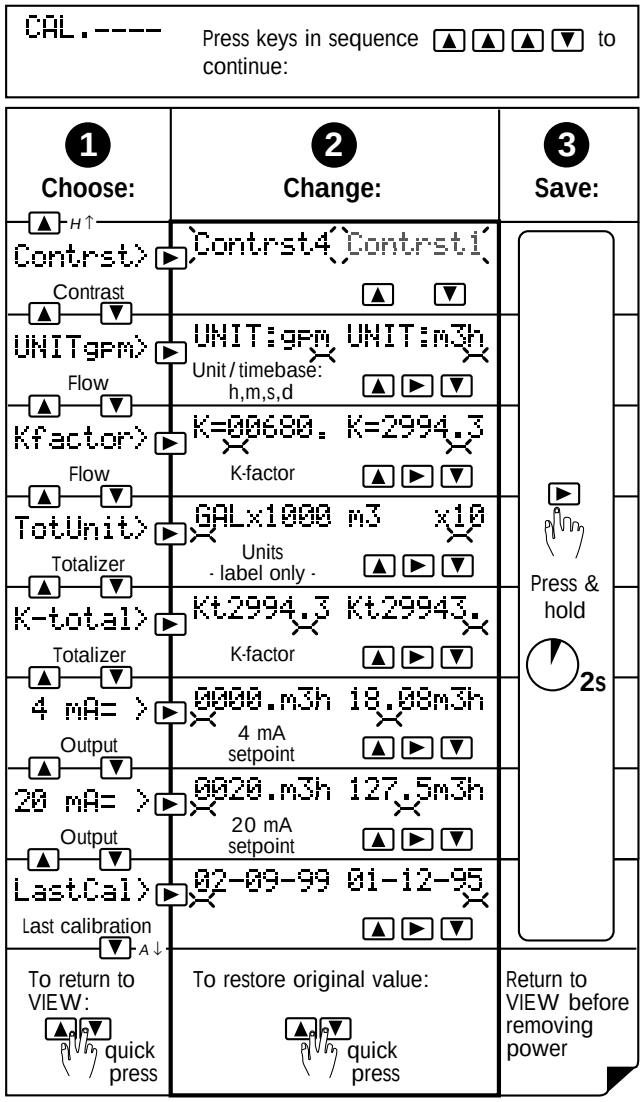
5. FUNCTIONS



6. VIEW (example)



7. **CALIBRATE** (example)



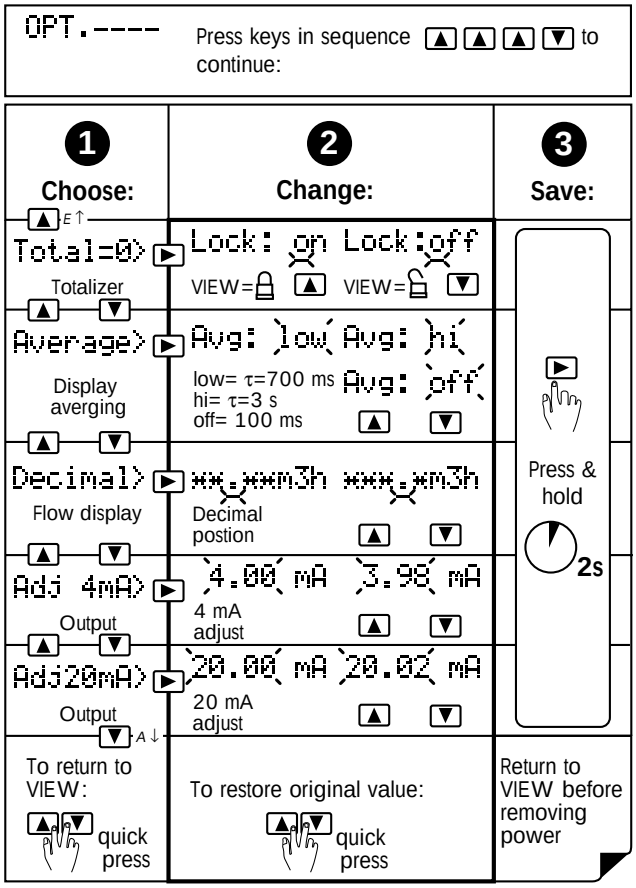
Menu Functions A - H:

A. Selects display contrast: 4 levels
B. Sets flow units (**gp**m) and timebase (gp**m**). Flow units label: Aa - Zz, 0 - 9; Timebase options: s=seconds, m=minutes, h=hours, d=days (timebase effects flow display and 4 to 20 mA output)
C. Sets flow K-factor: 000.01 to 99999. (see technical notes below)
D. Set totalizer units: For label purposes only
E. Sets totalizer K-factor: 000.01 to 99999. (see technical notes below)
F. Sets 4 mA setpoint (4 mA and 20 mA setpoints are reversible)
G. Sets 20 mA setpoint
H. Sets user defined date

Technical notes:

Flow and totalizer K-factors are independent of each other. These K-factors represent the number of pulses generated by the flow sensor for each engineering unit measured (published in flow sensor manual).

8. **OPTIONS** (example)



Menu Functions A - E:

A. Selects totalizer reset options: Lock **on** (enables) or lock **off** (disables) the VIEW menu totalizer reset security code feature (RST: - - - -).
B. Selects display averaging: off = 100ms, low= τ=700ms, hi= τ=3s (also affects 4 to 20 mA output).
C. Selects display decimal: ****. to **.**
D. Adjusts 4 mA output: 3.9 to 4.1 mA (overrides 4.00 mA factory calibration)
E. Adjusts 20 mA output: 19.8 to 21.0 mA (overrides 20.00 mA factory calibration)

9. Accessories

Order no.	Description
FP85UNM	Universal mounting kit, NPT ports
FP85UDM	Universal mounting kit, DIN ports
FP85NM	Integral sensor mounting kit, NPT ports
FP85DM	Integral sensor mounting kit, DIN ports
FP8501	Integral sensor, 0.5 to 4 inch pipe, Polypropylene body & Titanium rotor pin
FP8502	Integral sensor, 5 to 8 inch pipe, Polypropylene body & Titanium rotor pin
FP8503	Integral sensor, 0.5 to 4 inch pipe - PVDF body & Hastelloy C rotor pin
FP8501A	Integral sensor, 0.5 to 4 inch pipe, Polypropylene body & Titanium rotor pin
FP8502A	Integral sensor, 5 to 8 inch pipe - Polypropylene body & Titanium rotor pin
FP8503A	Integral sensor, 0.5 to 4 inch pipe - PVDF body & Hastelloy C rotor pin

10. Specifications

General Data

Compatible Sensors: FP-8501, FP-5300, FP-5100, FP-6000, and FP-5200 Series (contact engineering for additional compatible sensors).

Display Accuracy: Flow, ±0.1% of reading
Totalizers, ±0.03% of reading

Enclosure:
- Rating: NEMA 4X / IP65
- Material: Glass-filled polypropylene
- Gasket: Silicone rubber (captive)
- Screws: 8-32, self-tapping (captive)

Display:
- Type: 8-digit alphanumeric dot matrix
- Update rate: Flow=1s, Totalizers=100 mS
- Contrast: Variable
- Ranges: Flow, 0.01 to 9999.
  Resettable / permanent totalizers, 0 to 99999999
  Loop current, 3.90 to 21.00 mA

Environmental

Operating temperature: -15 to 70 °C (5 to 158 °F)
Storage temperature: -15 to 80 °C (5 to 176 °F)
Relative humidity: 0 to 95%, non-condensing

Agency Approvals
- CE
- Manufactured under ISO 9001

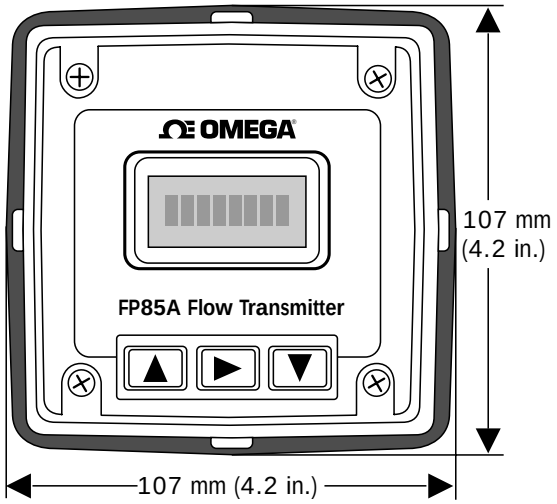
Electrical Data

Frequency range: 0.5 Hz to 500 Hz
Loop / system power: (2-wire mode) 17 to 30 VDC @ 20 mA max.
(3-wire mode) 17 to 30 VDC @ 68 mA max.
Sensor power: (2-wire mode) 5 VDC @ 1.5 mA max.
(3-wire mode) 5 VDC @ 20 mA max.

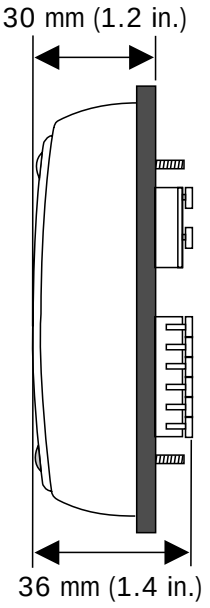
Loop:
- Impedance: 1 Ω max. @ 17 VDC,
  300 Ω max. @ 24 VDC,
  600 Ω max. @ 30 VDC
- Accuracy: ±0.050 mA
- Resolution: 5 µA
- Update rate: 100 ms

Outputs:
- Current: 4 to 20 mA (adjustable & reversible)
- Pulse output: Sensor frequency, optically isolated open-collector transistor, max. current sink 10 mA @ 30 VDC

Dimensions:



(front view)



(side view)

11. Troubleshooting

Display Message	Cause	Solution
OVER^gpm	1) Input frequency too high 2) Display overrange 3) Display timebase too large	1) Reduce input frequency. 2) Move display decimal to right in OPTIONS menu. 3) Change display timebase (H,M,S,D) to smaller value (e.g. LP**H** to LP**M**).
K=0error	K-Factor cannot be zero	Change K-Factor to a non-zero value.
2s - Check ↵ ↳ Setup - 2s	Memory corrupted	Press ▶ to restore normal operation. Settings will revert to factory default. Recalibration is required.