

## GENERAL

ALIAPD APF860PE series is designed in Roots technology with digit display for Totalizer & flowrate and providing scale pulse and analog output 4-20mA.

APF860PE series Roots flowmeters are both high accuracy and easily adaptable to most industrial applications.

## FEATURES

- 25 - 150 mm (1" - 6") lines sizes
- Handles viscosities up to 50000 CP
- Wide range of application
- Various process connection types available
- 5 digit Totalizer (Resetable) / 8 digit Totalizer (LCD)
- 4-20 mA and pulse output
- High accuracy of +/-0.5% of reading (or +/-0.2% of reading)
- Display with auto sleep function that gets up to 6 yrs of Battery life

## STANDARD SPECIFICATION

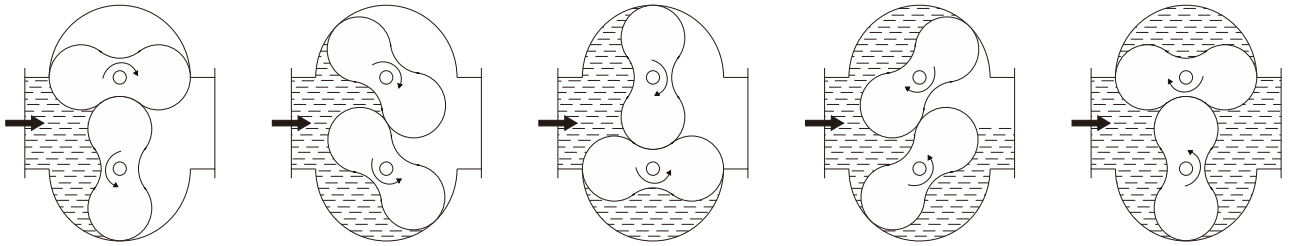
- Size : 0025, 0040, 0050, 0080, 0100, 0150 mm
- Flow Range : 0.007 - 200 M3/Hr
- Accuracy : +/- 0.5% of reading (Standard)  
: +/- 0.2% of reading (Option)
- Repeatability : +/- 0.1% of reading
- Material : Body, Cover & Flange : Cast Iron / Stainless Steel 316  
Roots : Aluminum / Copper / Stainless Steel 316  
O-Rings : PTFE  
Register Housing : Aluminum Alloy
- Max. Viscosity : 0.3 - 200 CP (Standard)  
: 201 - 50000 CP (Optional)
- Operating Temperature : -10 to 80°C  
: -10 to 120°C (Optional)  
: -10 to 180°C (Optional)
- Max. Pressure : 16 Kg/cm<sup>2</sup>
- Process Connection : Flange  
: JIS 10K FF / ANSI 150# FF
- Power Supply : 3.6V Battery, Size D x 1 ea
- Battery Life : 3-6 years
- Protection Class : IP65  
: Intrinsically Safe (Unscaled pulse Output)  
: Explosion Proof, Ex d IIB T6
- Painting : Dark Grey
- Ambient Temperature : -25 to +60°C



- Flow Range : 0025mm : 0.4 - 6 M3/Hr @ 5CP  
0040 mm / 0050 mm : 0.8 - 13 M3/Hr @ 5CP  
0080 mm : 1.8 - 25 M3/Hr @ 5CP  
080L mm / 0100 mm : 2.5 - 50 M3/Hr @ 5CP  
100L mm : 8 - 120 M3/Hr @ 5CP  
150L mm : 25 - 200 M3/Hr @ 5CP
- Display : Flow Rate/Totalizer : 5 Digit Flow rate / 8 Digit Totalizer  
Dual Totalizer : 5 Digit Totalizer (Resettable, Magnet)  
: 8 Digit Totalizer (Reset from Internal)
- Engineer Unit : L, M3, Ft3, Gal
- Time Unit : Sec, Min, Hr
- Current output : 4-20 mA (2 wire)  
Load : Rohm (Vdc-6)\*50
- Pulse Output : Without Display : Reed Switch (2 Wire, Unscaled pulse)  
: 2-36 VDC, 500mA Max.  
With Display : Open Collector (2 Wire, Scaled pulse)  
: 11 to 26Vdc, 50 mA Max.
- Cable Entry : 1/2" NPT (F)
- Optional : Heating Jacket (Heat oil or Steam)  
: Strainers, U-Type or Y-Type  
: Air Eliminator  
: AM(Ambient Temperature Inspection)



## WORKING PRINCIPLE



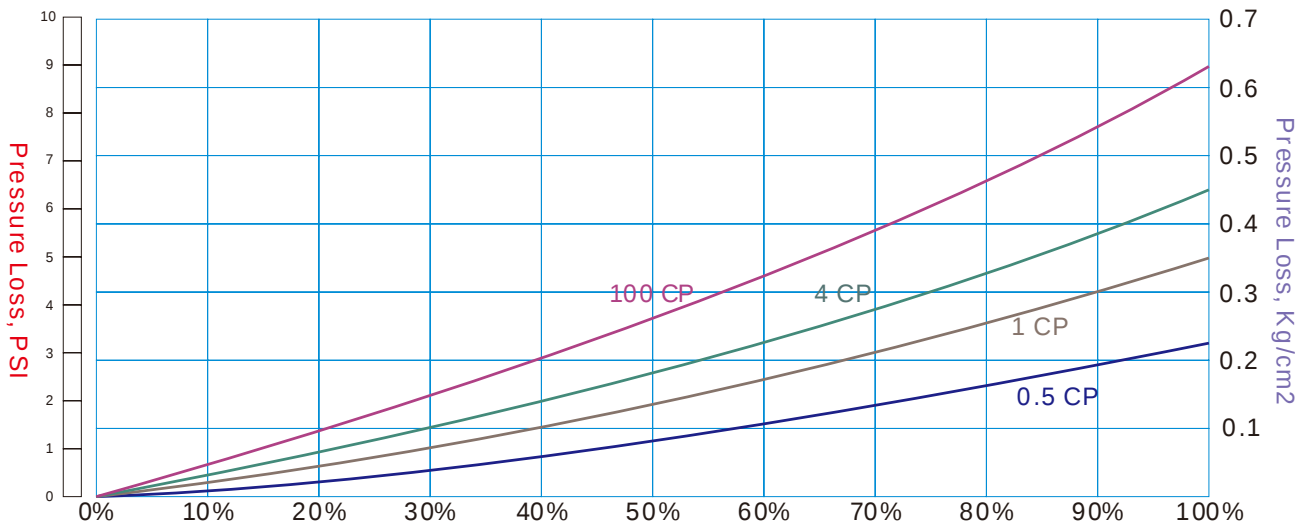
## STANDARD FLOW RANGE

Accuracy: +/- 0.5% of reading

Unit: M3/Hr

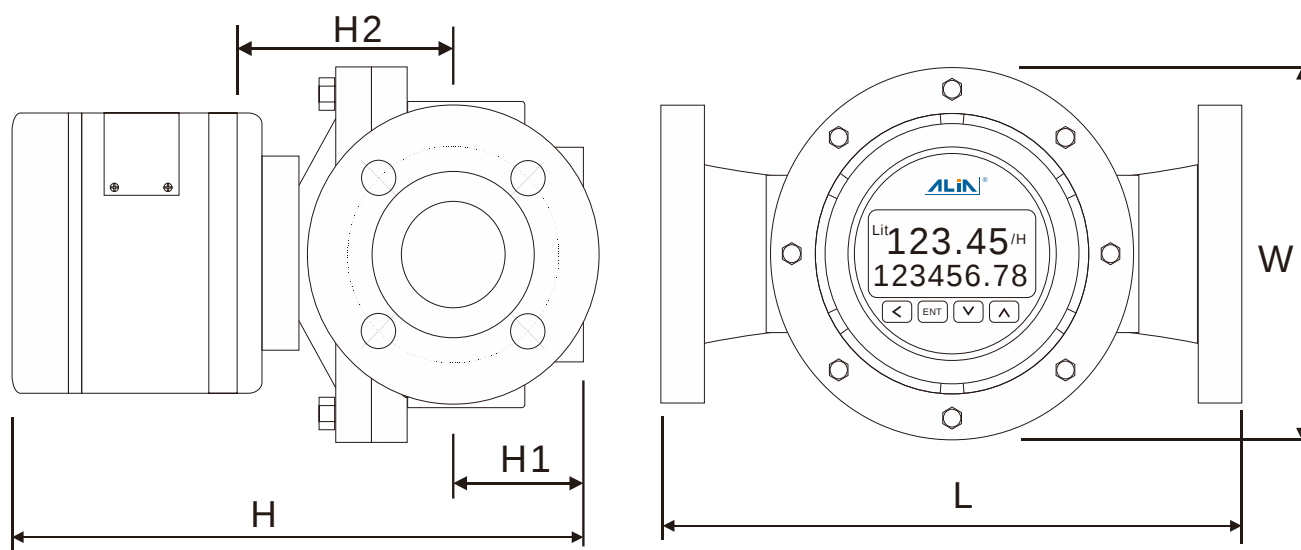
| Normal Size |        | Viscosity ( CP ) |          |           |          |           |          |           |             |             |
|-------------|--------|------------------|----------|-----------|----------|-----------|----------|-----------|-------------|-------------|
| mm          | Inch   | <0.5             | 0.5 - 2  | 2 - 5     | 5 - 10   | 10 - 50   | 50 - 150 | 150 - 500 | 500 - 2000  | > 2000      |
| 0025        | 1"     | X                | 1 - 4.5  | 0.8 - 4.5 | 0.4 - 6  | 0.1 - 6   | 0.05 - 6 | 0.025 - 6 | 0.013 - 4.5 | 0.007 - 3.5 |
| 0040        | 1-1/2" | X                | 2 - 9    | 1.5 - 9   | 0.8 - 13 | 0.25 - 13 | 0.1 - 13 | 0.05 - 13 | 0.02 - 13   | 0.01 - 9    |
| 0050        | 2"     | X                | 2 - 9    | 1.5 - 9   | 0.8 - 13 | 0.25 - 13 | 0.1 - 13 | 0.05 - 13 | 0.02 - 13   | 0.01 - 9    |
| 0080        | 3"     | 6.5 - 17         | 5 - 17   | 3.5 - 25  | 1.8 - 30 | 0.6 - 35  | 0.3 - 35 | 0.15 - 35 | 0.07 - 20   | 0.03 - 17   |
| 080M        | 3"(M)  | 13 - 35          | 8 - 35   | 5 - 35    | 2.5 - 50 | 1 - 50    | 0.5 - 50 | 0.25 - 50 | 0.12 - 35   | 0.05 - 28   |
| 080L        | 3"(L)  | 18 - 55          | 12 - 55  | 7 - 55    | 2.8 - 70 | 1.4 - 70  | 0.7 - 70 | 0.35 - 70 | 0.23 - 50   | 0.07 - 38   |
| 0100        | 4"     | 18 - 55          | 12 - 55  | 7 - 55    | 2.8 - 70 | 1.4 - 70  | 0.7 - 70 | 0.35 - 70 | 0.23 - 50   | 0.07 - 38   |
| 100L        | 4"(L)  | 25 - 85          | 16 - 85  | 12 - 85   | 8 - 120  | 4 - 120   | 2 - 120  | 0.7 - 120 | 0.35 - 85   | 0.17 - 60   |
| 0150        | 6"     | 65 - 150         | 50 - 150 | 35 - 180  | 25 - 200 | 20 - 200  | 15 - 220 | 10 - 230  | 4 - 200     | 2 - 150     |

## PRESSURE LOSS



| Model Code | Size  |        | Maximum Flow Rate | Model Code | Size   |    | Maximum Flow Rate |
|------------|-------|--------|-------------------|------------|--------|----|-------------------|
| 0025       | 25 mm | 1"     | 6 M3/Hr           | 080L       | 80 mm  | 3" | 70 M3/Hr          |
| 0040       | 40 mm | 1-1/2" | 13 M3/Hr          | 0100       | 100 mm | 4" | 70 M3/Hr          |
| 0050       | 50 mm | 2"     | 13 M3/Hr          | 100L       | 100 mm | 4" | 120 M3/Hr         |
| 0080       | 80 mm | 3"     | 30 M3/Hr          | 0150       | 150 mm | 6" | 120 M3/Hr         |
| 080M       | 80 mm | 3"     | 50 M3/Hr          |            |        |    |                   |

## DIMENSIONS



| Normal Size |       | Material : Cast Iron / Length Unit : mm |     |     |     |     |        |
|-------------|-------|-----------------------------------------|-----|-----|-----|-----|--------|
| mm          | Inch  | L                                       | H   | H1  | H2  | W   | Weight |
| 0050        | 2"    | 250                                     | 340 | 105 | 95  | 193 | 22 Kg  |
| 0080        | 3"    | 320                                     | 420 | 144 | 136 | 225 | 45 Kg  |
| 080M        | 3"(M) | 320                                     | 420 | 144 | 136 | 230 | 49 Kg  |
| 080L        | 3"(L) | 320                                     | 420 | 144 | 136 | 243 | 75 Kg  |
| 0100        | 4"    | 320                                     | 420 | 144 | 136 | 251 | 80 Kg  |
| 100L        | 4"(L) | 425                                     | 610 | 244 | 226 | 275 | 175 Kg |
| 0150        | 6"    | 425                                     | 760 | 322 | 298 | 293 | 280 Kg |

| Normal Size |        | Material : Stainless Steel 316 / Length Unit : mm |     |     |     |     |        |
|-------------|--------|---------------------------------------------------|-----|-----|-----|-----|--------|
| mm          | Inch   | L                                                 | H   | H1  | H2  | W   | Weight |
| 0025        | 1"     | 200                                               | 288 | 78  | 70  | 152 | 15 Kg  |
| 0040        | 1-1/2" | 200                                               | 288 | 78  | 70  | 163 | 20 Kg  |
| 0050        | 2"     | 250                                               | 340 | 105 | 95  | 193 | 26 Kg  |
| 0080        | 3"     | 320                                               | 420 | 144 | 136 | 225 | 55 Kg  |
| 080M        | 3"(M)  | 320                                               | 420 | 144 | 136 | 230 | 58 Kg  |

## PRODUCTS LINE

| Cast Iron | 0025 | 0040   | 0050 | 0080 | 080M | 080L | 0100 | 100L | 0150 |
|-----------|------|--------|------|------|------|------|------|------|------|
|           | 1"   | 1-1/2" | 2"   | 3"   | 3"M  | 3"L  | 4"   | 4"L  | 6"   |
| JIS 10K   |      |        |      |      |      |      |      |      |      |
| ANSI 150# |      |        |      |      |      |      |      |      |      |

| S.S.316   | 0025 | 0040   | 0050 | 0080 | 080M | 080L | 0100 | 100L | 0150 |
|-----------|------|--------|------|------|------|------|------|------|------|
|           | 1"   | 1-1/2" | 2"   | 3"   | 3"M  | 3"L  | 4"   | 4"L  | 6"   |
| JIS 10K   |      |        |      |      |      |      |      |      |      |
| ANSI 150# |      |        |      |      |      |      |      |      |      |

## MODEL SELECTION GUIDE

### APF860PE Series

Example:APF860PE-CI-0050-ARPM-NN-S/V-NN

| APF860PE-          | XX-         | XXXX | -X                                                                    | X | X | X | -XX | -X | -XX | Description                                                 |
|--------------------|-------------|------|-----------------------------------------------------------------------|---|---|---|-----|----|-----|-------------------------------------------------------------|
| Material           | CI-         |      |                                                                       |   |   |   |     |    |     | Cast Iron Body / Aluminum or Copper Roots (According Fluid) |
|                    | SS-         |      |                                                                       |   |   |   |     |    |     | Stainless Steel 316 Body / Flange / Roots                   |
| Size               | 0025 ~ 0150 |      | 0025, 0040, 0050, 0080, 080M, 080L, 0100, 100L, 0150, mm              |   |   |   |     |    |     |                                                             |
| Process connection |             | -A   | ANSI 150 # FF                                                         |   |   |   |     |    |     |                                                             |
|                    |             | -J   | JIS 10K FF                                                            |   |   |   |     |    |     |                                                             |
| Register           |             | N    | Without Display                                                       |   |   |   |     |    |     |                                                             |
|                    |             | R    | 5 Digit Flow rate / 8 Digit Totalizer (Internal reset)                |   |   |   |     |    |     |                                                             |
|                    |             | T    | 5 Digit Totalizer (Magnet reset) / 8 Digit Totalizer (Internal reset) |   |   |   |     |    |     |                                                             |
| Output             |             | N    | None                                                                  |   |   |   |     |    |     |                                                             |
|                    |             | U    | Unscaled Pulse Output only, Without Display (Reed Switch)             |   |   |   |     |    |     |                                                             |
|                    |             | I    | 4-20 mA (2 Wire)+Scaled pulse output(Register R)                      |   |   |   |     |    |     |                                                             |
|                    |             | P    | Scaled pulse output (Open Collector 2 Wire)(Register T)               |   |   |   |     |    |     |                                                             |
| Max. Temperature   |             | N    | -10 to 80°C                                                           |   |   |   |     |    |     |                                                             |
|                    |             | M    | -10 to 120°C                                                          |   |   |   |     |    |     |                                                             |
|                    |             | H    | -10 to 180°C                                                          |   |   |   |     |    |     |                                                             |
| Protection Class   |             | -NN  | IP65                                                                  |   |   |   |     |    |     |                                                             |
|                    |             | -IT  | Intrinsically Safe (Without Display, Unscaled pulse output only)      |   |   |   |     |    |     |                                                             |
|                    |             | -EX  | Explosion Proof, Ex d IIB T6 (Except Register " N ")                  |   |   |   |     |    |     |                                                             |
| Option             |             | -N   | None                                                                  |   |   |   |     |    |     |                                                             |
|                    |             | -S   | Strainer                                                              |   |   |   |     |    |     |                                                             |
|                    |             | -C   | High Accuracy 0.2%                                                    |   |   |   |     |    |     |                                                             |
|                    |             | -V   | Viscosity higher than 200 CP                                          |   |   |   |     |    |     |                                                             |
|                    |             | -A   | Air Eliminator                                                        |   |   |   |     |    |     |                                                             |
|                    |             | -H   | Heating Jacket                                                        |   |   |   |     |    |     |                                                             |
|                    |             | -AM  | Ambient Temperature Inspection                                        |   |   |   |     |    |     |                                                             |
| Battery            |             | -NN  | Battery Holders without Battery                                       |   |   |   |     |    |     |                                                             |
|                    |             | -BT  | Battery Holders with Battery, 3.6V / Size D *1PC                      |   |   |   |     |    |     |                                                             |