

# SHPFI-M

## Features

- Accepts Inputs From: Magnetic Pickups, Contact Closures, DC Pulses (Optically Isolated) from Pulse Producing Flowmeters
- 4-20mA Analog Output Option (8 updates/sec)
- 20 Point Linearization
- Isolated Scaled Pulse Output of Total
- Nonvolatile Flash Memory of Setup Data and Calibration Information
- Setup Software for Easy Programming and Monitoring Using a PC and Special Serial Cable (BSAC1)

## Description

The SHPFI-M is a smart frequency to current converter and also a frequency to frequency pulse scaler. It is intended to be used with flow meters and similar devices who generate a pulse signal either from a magnetic pickup or a contact closure whose frequency is related to flow rate and where each pulse represents a quantity of flow. The SHPFI-M also contains a linearization function commonly required by flow meters to improve their accuracy. The flow rate and total are computed within the SHPFI-M and the 4-20mA analog output and the high level scaled pulse output are generated from these computed values. The SHPFI-M is programmed using a special setup program from a PC. A special programming cable called the BSAC1 is also required. These items are purchased separately. The computed Rate and Total may also be viewed on your PC using these special cables.

## Specifications

### POWER:

#### LOOP POWERED

Voltage: 8.5 to 30 VDC

Protection: Reverse Polarity Protection on Current Loop

Loop Burden: 8.5V maximum

### COMPUTATION:

#### Rate Computation

5 Digits (99999), updates 8X per second

Time base: /SEC, /MIN, /HR/DAY

Min. Input Frequency: 0.01 Hz to 10 Hz (selectable delay of 0.1 to 99.9 seconds) Selectable Rate Damping

### PULSE OUTPUT OF COMPUTED TOTAL:

The pulse output advances with the least significant digit of the computed totalizer or decimal multiples thereof (see Pulse scale divider).

Type: Isolated photomos relay

Max. voltage (off state): 30 VDC

Current (on state): 100mA

Pulse Duration: Selectable 0.5, 0.25, 0.125, 0.0625 seconds

Pulse Scale divider (Pulscale): User selectable, +1, +10, +100 or OFF

### ACCURACY:

0.01% Computed Rate,  $\pm 1$  least significant digit of computed rate

Temperature Drift: 50 ppm/ $^{\circ}$ C Worst Case

### ENVIRONMENTAL:

#### OPERATING TEMPERATURE

-4 $^{\circ}$ F (-20 $^{\circ}$ C) to +158 $^{\circ}$ F (70 $^{\circ}$ C)

Extended Temp: -22 $^{\circ}$ F (-30 $^{\circ}$ C) to +158 $^{\circ}$ F (70 $^{\circ}$ C)

#### HUMIDITY

0 - 90% Noncondensing

## Smart Frequency to Current Loop Powered Flow Transmitter with Scaled Pulse Output



## MOUNTING STYLES:

### 0- OEM-

OEM option

### 2- Wall Mount -

NEMA 4X Enclosure

### 3- Explosion Proof -

Class I, Division I, Groups B, C & D  
Class II, Division I, Groups E, F & G

**NOTE:** Meter mounting kits available (consult Factory)

## INPUTS:

### MAGNETIC PICKUP INPUT

Frequency Range: 0 to 3500 Hz

Trigger Sensitivity: 10 mV p-p (nominal)

Over Voltage Protected:  $\pm 30$  VDC

### OPTO-ISOLATED DC PULSE INPUT

High (logic 1): 4-30 VDC

Low (logic 0): Less Than 1 VDC

Minimum Current: .5 mA

Hysteresis: 0.4 VDC

Frequency Range: 0 to 5 kHz

Min. Pulse Width: 0.1 msec

### CONTACT CLOSURE INPUT (contact closure to common)

Internal Pullup Resistor: 100 K $\Omega$  to +3.6 VDC

High (logic 1): Open or 4-30 VDC

Low (logic 0): Less Than .5 VDC

Internal Switch Debounce Filter: 0 to 40 Hz (others on request)

### K-FACTOR

Range: 0.001 to 99999999

Decimal Point Locations: XXXX.XXXX to XXXXXXXX

### 20 POINT LINEARIZATION

This feature allows the user to enter 20 different frequencies with 20 different corresponding K-Factors to linearize non linear signals.

### ANALOG OUTPUT:

Type: 4-20 mA follows computed rate display, Two wire hookup

Accuracy: 0.025% Full Scale at 20 $^{\circ}$  C

Temperature Drift:

50 ppm/ $^{\circ}$ C Typical

Reverse Polarity Protected

Update Rate: 8 times/second

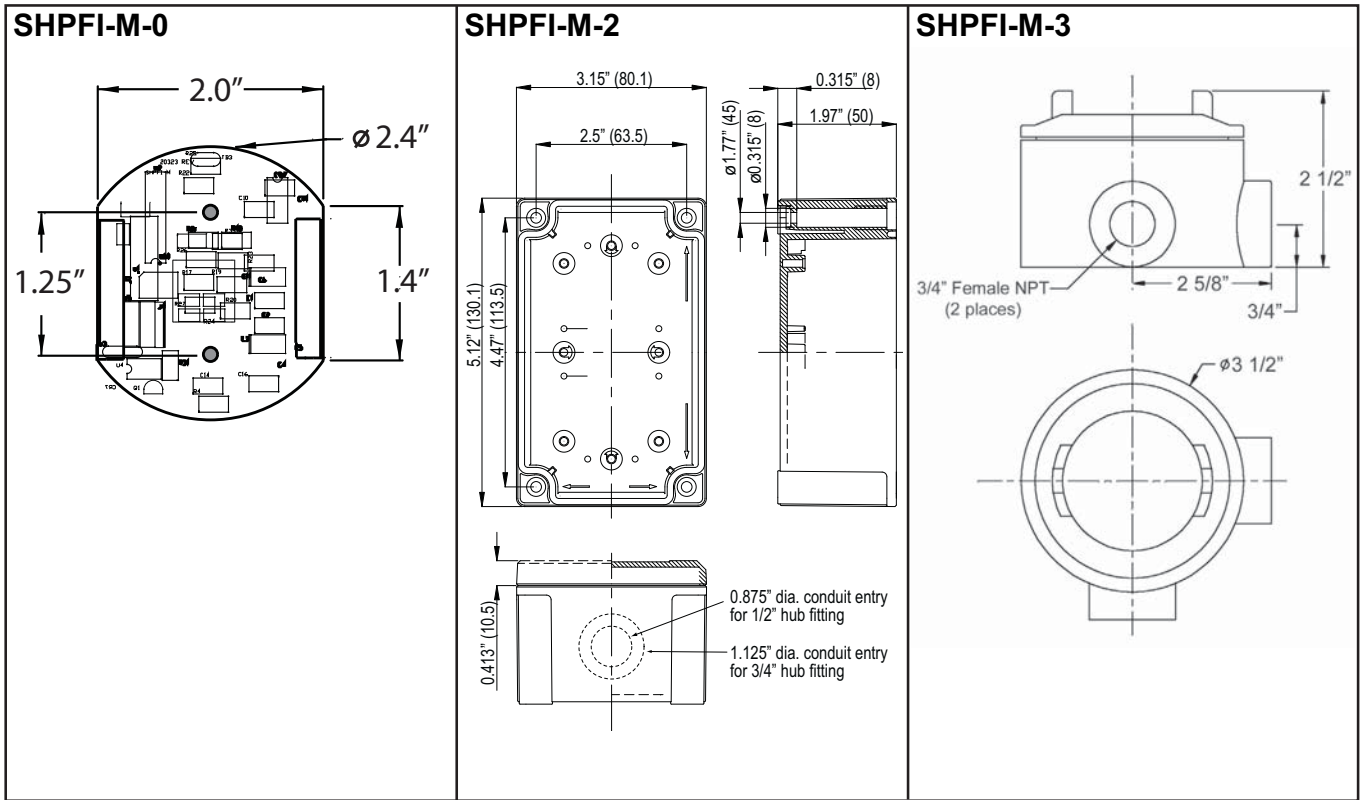
### COMMUNICATIONS ACCESSORY:

#### RS232 SERIAL SETUP SOFTWARE

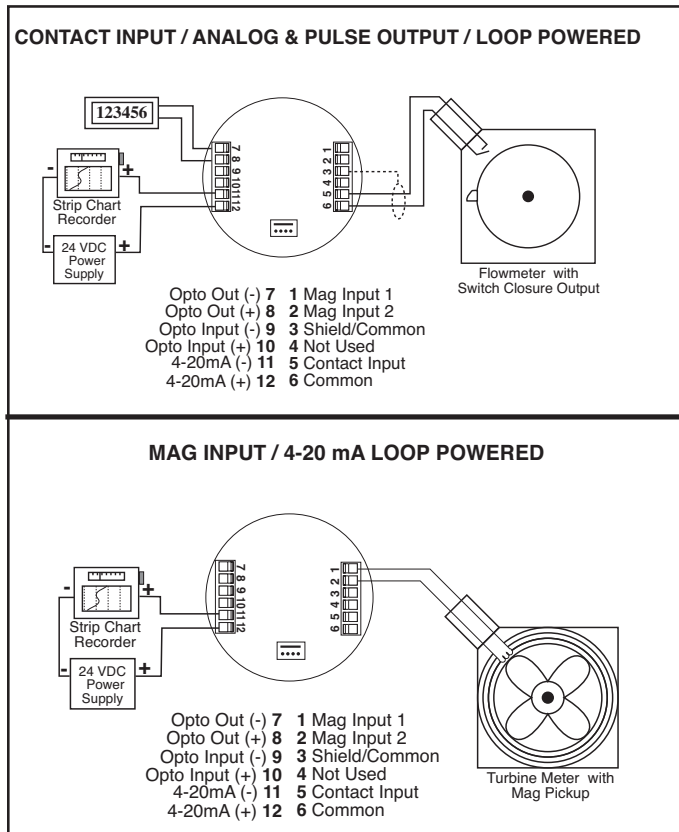
This accessory enables you to access a variety of process parameters through serial communications. PC compatible communications software is included with this cable. With this software and a Serial Adapter Cable (BSAC1) you will be able to setup the unit through your PC.

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**Dimensions:**



**Typical Wiring:**



**Decoding Part Number:**

**Ordering Information**

**EXAMPLE:** SHPFI-M 2 HF2 ET

**Series:** \_\_\_\_\_

**Mounting:** \_\_\_\_\_  
 0 = OEM  
 2 = NEMA 4X Box  
 3 = Explosion Proof Housing

**Mounting Options for NEMA 4X:** \_\_\_\_\_  
 H2 = 0.875" Hole for NEMA4X mounting style  
 HF2 = 0.5" Female NPT Hub fitting for NEMA4X mounting style  
 H3 = 1.125" Hole for NEMA4X mounting style  
 HF3 = 3/4" Female NPT Hub fitting for NEMA4X mounting style

**Additional conduit entry configurations are available, consult factory.**

**Options (Multiple Options Available)** \_\_\_\_\_  
 ET = Extended Temp.: -22°F to 158°F (-30°C to 70°C)  
 CE\*\* = CE Compliant  
 CSA\*\* = CSA Listed Explosion Proof (planned)  
 IS\*\* = UL Listed IS (planned)

**Accessories:**  
 115-24 = 115 VAC to 24 VDC power supply  
 BSAC1 = RS232 Serial Adapter Cable (for programming only) with setup software. For use with S1 option.  
 TFM-MK -1 = Turbine Flow meter Mounting Kit for flow meters with a 1" Male NPT riser  
 TFM-MK -3/4 = Turbine Flow meter Mounting Kit for flow meters with a 3/4" Male NPT riser  
 CA-TM-2-18-FL = 18" Turbine Flow meter Cable Assembly