

MICROPROCESS RATE & TOTALIZER CONTROLLER METER



FEATURES

- Programmable rate 0 to 9999 digit (rate) 0 to 99999999 digit (totalizer)
- Accuracy 0.1% F.S. (DC, AC(TRMS))
- Programmable time base (1, 60, 3600 seconds)
- Programmable scale factor (0.0001 to 9999.9999)
- Decimal point can be modified
- Dual alarms, compare hysteresis functions
- 15 bits DAC analog output function
- Transmitter excitation supply DC 24V (≤25mA)

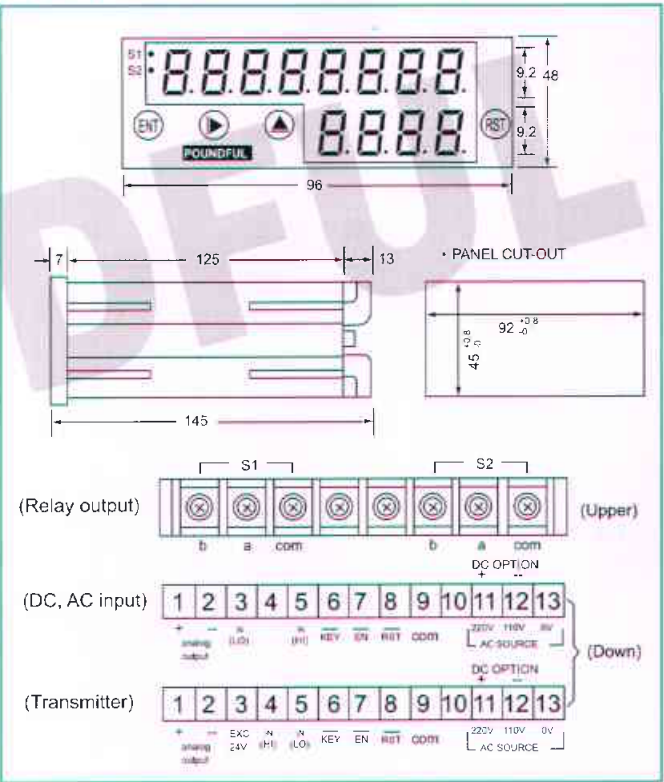
1. MODEL: PF - IT- [ ] - [ ] [X] → X = 0 (non-alarm) X = 1 (one-alarm), X = 2 (two-alarm)

NO	Input Type	NO	Input Range	NO	Input Range	NO	Output Range	NO	Aux. Power
A	DC	1	DC 0-50mV (shunt)	6	DC 4-20mA (EXC. 24V)	N	None	1	AC 110/220V (50/60Hz)
B	AC (RMS)	2	DC 1-5V	7	AC 0-1A	1	DC 0-10V (non-isolating)	2	DC 24V
C	AC (TRMS)	3	DC 1-5V (EXC. 24V)	8	AC 0-5A	2	DC 4-20mA (non-isolating)	3	DC 48V
		4	DC 0-10V	9	SPECIFIED	3	DC 0-10V (isolating)	4	DC 110V
		5	DC 4-20mA			4	DC 4-20mA (isolating)	5	DC 220V
						5	SPECIFIED	6	AC 90-260V
								9	SPECIFIED

2. Specification

- Aux. power supply : AC110 or 220V ±20% (50 or 60Hz)  
(Optional DC 24V or 48V or 110V or 220V switching AC100~240V ±10%)
- Measuring accuracy : 0.1% F.S. ±1 digit (DC, AC(TRMS))  
(23±5°C) 0.15% F.S. ±1 digit (AC(TRMS))
- Readout (compare) range : "0" to "9999" adjustable (rate)  
"0" to "99999999" adjustable (totalizer)
- Compare hysteresis range : "0" to "99" adjustable
- Alarm action : "Hi" or "Lo" adjustable
- Relay contact output : AC 250V~3A, DC30V~5A
- Analog output selection : Rate or totalizer can be modified
- Analog output resolution : 15 bit DAC
- Output drive capability : ≤10mA for voltage mode  
≤10V for current mode
- Output ripple (p-p) : <0.1% F.S.
- Over input indication : "ovEr"
- Temp. coefficient : 100ppm/°C (0-50°C)
- Display : Red high efficiency LEDs high 9.2mm (0.36")
- Parameter setting : Touch switches
- Memory type : Non-volatile EEPROM memory
- Dielectric strength : 2KVac/1min. (power / input & output)
- Operating condition : 0~50°C (20 to 90% RH non-condensed)
- Storage condition : 0~70°C (20 to 90% RH non-condensed)

3. Dimension and connection diagram



# MICROPROCESS RATE & TOTALIZER CONTROLLER METER



## FEATURES

- Resolution of 5 digits rate and 10 digits totalizer simultaneously
- Accuracy 0.1% F.S. for DC and AC(TRMS)
- Automatic, external or button totalizer reset
- Sensor voltage +12V or +24V can be selected ( $\leq 50\text{mA}$ )
- Programmable time base (1, 60, 3600 seconds)
- Programmable scale factor (0.00001 to 19999.99999)
- Rate with/without math rootextractor function
- Four alarms with hysteresis and delay functions (optional)
- 16 bits DAC analog output can be modified (optional)
- RS-485/RS-232 communication with Modbus RTU mode (optional)

## 1. MODEL: PF - ITA- [Color Code]

NO	Input Type	NO	Input Range	NO	Analog Output	NO	Alarm	NO	Pulse	NO	Communication (Modbus RTU)	NO	Aux. Power
A	DC	1	DC 0-50mV	See Analog Output Table	0 None 1 1 Alarm 2 2 Alarms 3 3 Alarms 4 *4 Alarms	0	None	0	None	0	None	1	AC 100~240V $\pm 10\%$
B	AC (RMS)	2	DC 1-5V			1	1 Alarm	1	Relay	1	RS485	2	DC 24~70V $\pm 10\%$
C	AC (TRMS)	3	DC 0-10V			2	2 Alarms	2	Open Collector	2	RS232	3	AC/DC 24V $\pm 10\%$
		4	DC 4-20mA			3	3 Alarms					4	DC 110V $\pm 10\%$
		5	AC 0-1A			4	*4 Alarms					9	SPECIFIED
		6	AC 0-5A										$\leq 15\text{VA}$ for AC $\leq 10\text{W}$ for DC
		9	SPECIFIED										

Pulse output unavailable if 4 alarms specified

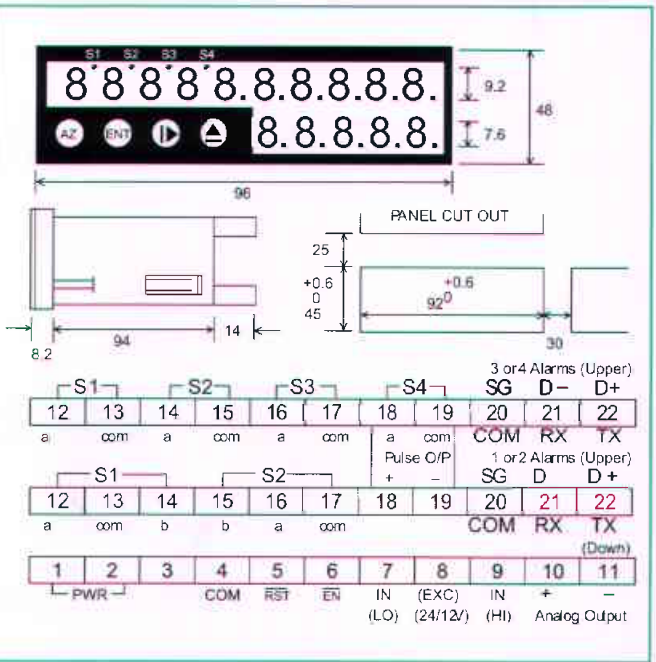
## 2. Specification

- Aux. power supply : AC 100~240V  $\pm 10\%$  50/60Hz  
DC 24~70V  $\pm 10\%$   
AC/DC 24V  $\pm 10\%$   
DC 110V  $\pm 10\%$
- Measuring accuracy : 0.1% F.S.  $\pm 1$  digit (DC, AC(TRMS))  
(23  $\pm 5^\circ\text{C}$ )  
0.15% F.S.  $\pm 1$  digit (AC(RMS))
- Readout (compare) range : "0" to "24999" adjustable (rate)  
"0" to "2147483647" adjustable (totalizer)
- Alarm selection : Rate and Totalizer can be modified
- Compare hysteresis range : 0~999 adjustable
- Alarm action : "Hi" or "Lo" adjustable
- Alarm relay contact output : AC 250V/3A, DC 30V/5A
- Analog output selection : Rate or Totalizer can be modified
- Analog output resolution : 16 bit DAC (isolating)
- Output drive capability :  $\leq 20\text{mA}$  for voltage mode  
 $\leq 14\text{V}$  for current mode
- Output ripple (p-p) :  $< 0.1\%$  F.S
- Response time :  $\leq 250\text{ms}$  (0~90%)
- Pulse relay contact output : DC 100V/0.5A  $\leq 10\text{VA}$   
300, 400, 500, 600, 700ms
- Pulse open collector :  $\leq \text{DC } 30\text{V}/40\text{mA}$   
20, 30, 40, 50, 60ms
- Communication speed : 2400, 4800, 9600, 19200 bps
- RTU data format : <8,N,1>, <8,N,2>, <8,E,1>, <8,O,1>
- Communication address : "1" to "247" can be modified
- Parameter setting : Touch switches
- Memory type : Non-volatile EEPROM
- Waterproof and dustproof : IP65 (optional)  
(front direction) (optional)
- Dielectric strength : 2KVac/1 min. (power/input/output)
- Temp. coefficient : 100ppm/ $^\circ\text{C}$  (0-50 $^\circ\text{C}$ )
- Operating condition : 0~50 $^\circ\text{C}$  (20~90% RH non-condensed)
- Storage condition : 0~70 $^\circ\text{C}$  (20~90% RH non-condensed)

## 3. Analog output switching table

NO	Output Range	O/P Range 1-2-3-4-5-6	O/P Mode 7-8
N	Non-output	switching status on=1 off=0	
1	0 ~ 1V	1-0-1-1-1-0	1-1
2	0 ~ 5V	1-0-1-0-1-0	1-1
3	1 ~ 5V	1-1-1-0-1-1	1-1
4	0 ~ 10V	1-1-0-1-0-0	1-1
5	2 ~ 10V	1-1-1-1-0-1	1-1
6	0 ~ 1mA	0-1-1-1-1-0	0-0
7	0 ~ 10mA	1-0-1-0-1-0	0-0
8	0 ~ 20mA	1-1-0-1-0-0	0-0
9	4 ~ 20mA	1-1-1-1-0-1	0-0
S	SPECIFIED (NON-PROGRAMMABLE)		

## 3. Dimension and connection diagram





# MICROPROCESS RATE AND TOTALIZER CONTROLLER METER(PULSE INPUT)



## FEATURES

- Programmable rate 0 to 9999 digit (rate), 0 to 99999999 digit (totalizer)
- Input pulse or magnetic pick-up can be modified
- Accuracy 0.03% F.S. (rate)
- Input ranges from 0.01Hz to 10KHz
- Programmable time base (1,60,3600 second)
- Programmable rate 0 to 9999 digit
- Input pulse cut off sampling time 0.1~99.9 second can be modified
- Programmable totalizer of pulse in time base (0~99999999)
- Programmable scale factor (0.0001~9999.9999)
- Dual alarm function (Optional)
- 15 bit DAC isolating analog output function (Optional)

## 1. MODEL: PF - FRT - [Color] - [Color] - [Color] - [Color]

NO	Input Type	NO	Alarm	NO	Analog Output	NO	Communication	NO	Aux. Power
A	Pulse (NPN)	0	Non-alarm	N	None	N	None	1	AC 100V/200V
B	Pulse (PNP)	1	One-alarm	I	DC 4-20mA	1	RS232	2	DC 24V
C	Magnetic pick-up	2	Two-alarm	V	DC 0-10V	2	RS485	3	DC48V
				R	SPECIFIED			4	DC 110V
								5	DC 220V
								6	AC 90~260V
								9	SPECIFIED
									• ±20% of rate, less 3.5VA for AC input
									• ±20% of rate, less 3WATT for DC input

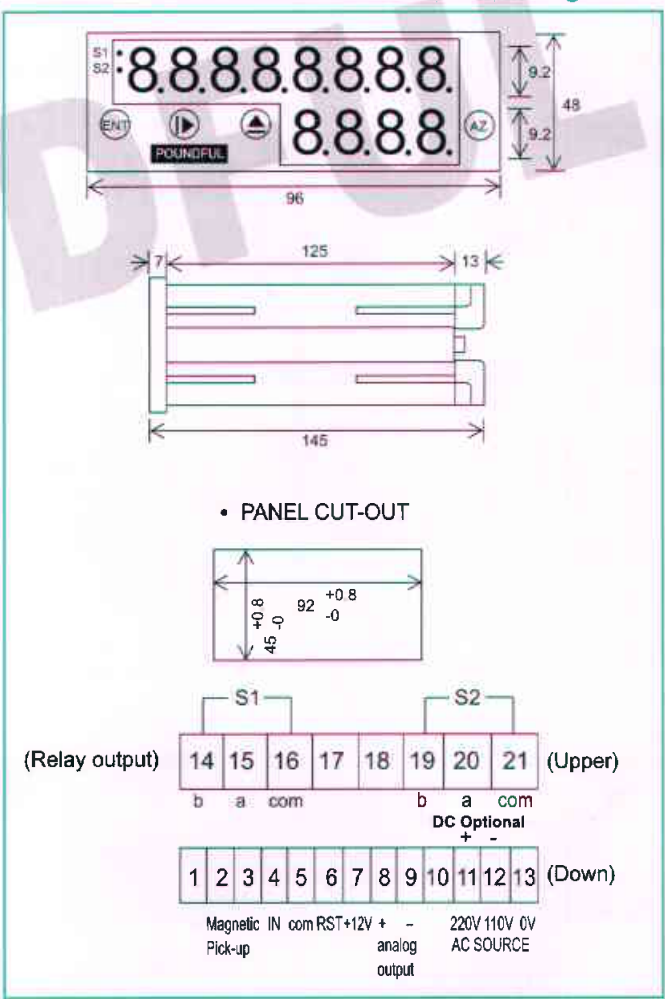
## 3. Function switches (SW1)

- 1 SW1-1 ON : magnetic pick-up input
- 2 SW1-2 ON : pulse input
- 3 SW1-3 ON : pulse PNP
- 4 SW1-4 ON : pulse NPN

## 2. Specification

- Aux.power supply : AC110 & 220V ±20% (50 or 60Hz)  
(Optional DC 24V or 48V or 110V or 220V switching AC100~240V ±10%)
- Measuring accuracy : 0.03% F.S. (rate) (23±5°C)
- Count input type : Switch selectable current sourcing (≤5mA) or current sinking (≤2.5mA) or magnetic pick-up
- Count input trigger levels : Pulse ( $V_{IH}=3V$ ,  $V_{IL}=2.5V$ )  
Magnetic pick-up ( $V_{IH} \geq 30mV(p-p)$ , 40V max.) can be modified
- Max.count rates : ≤10kHz (50% duty cycle) (pulse)  
≤10kHz (magnetic Pick-up)
- Sampling time : 10cycle/sec. (≥10Hz) (rate)  
f cycle/sec. (<10Hz) (rate)
- Over input indication : "ovEr"
- Readout (compare) range : "0" to "9999" adjustable (rate)  
"0" to "99999999" adjustable (totalizer)
- Alarm action : "Hi" or "Lo" adjustable
- Relay contact output : AC250V~3A, DC30V~5A
- Analog output resolution : 15 bit DAC (isolating)
- Output drive capability : ≤10mA for voltage mode  
≤10V for current mode
- Output ripple (p-p) : <0.1%F.S.
- Temp. coefficient : 50ppm/°C (0-50°C)
- Display : Red high efficiency LEDs high 9.2mm
- Parameter setting : Touch switches
- Memory type : Non-volatile EEPROM memory
- Dielectric strength : 2KVac/1 min. (input/output/power)
- Operating condition : 0~50°C (20~90%RH non condensed)
- Storage condition : 0~70°C (20~90% RH non-condensed)

## 4. Outside dimension and connection diagram



MICROPROCESS RATE & TOTALIZER CONTROLLER METER (PULSE INPUT)



FEATURES

- Programmable rate 0 to 29999 digit (rate), 0 to 2147483647 digit (totalizer)
- Input pulse or magnetic pick-up can be modified
- Accuracy 0.03% F.S.
- Automatic, external, or button totalizer reset
- Input ranges from 0.01Hz to 15KHz
- Sensor voltage +12V or +24V can be selected ( $\leq 50\text{mA}$ )
- Programmable time base (1,60,3600 second)
- Programmable scale factor (0.00001 to 19999.99999)
- Input pulse cut off sampling time 0.1~99.9 second can be modified
- Programmable totalizer of pulse in time base (0~999999999)
- Four alarms with hysteresis and delay functions (optional)
- 16 bit DAC analog output type can be modified (optional)
- RS485/ RS232 communication with Modbus RTU mode (optional)

1. MODEL: PF-FRTA - [Color Codes]

NO	Input Type	NO	Analog Output	NO	Alarm	NO	Alarm	NO	Pulse	NO	Communication (Modbus RTU)	NO	Aux. Power	NO	Aux. Power	
A	Pulse (NPN)	See Analog Output Switching Table	0	None	3	3 Alarms	0	None	0	None	0	None	1	AC 90 ~ 260V	4	DC 110V
B	Pulse (PNP)		1	1 Alarms	4	4 Alarms	1	Relay	1	RS485	2	DC 24 ~ 70V	9	SPECIFIED		
C	Magnetic pick-up		2	2 Alarms			2	Open Collector	2	RS232	3	AC/DC 24V		≤15VA for AC ≤15W for DC		
Pulse output unavailable if 4 alarms specified																

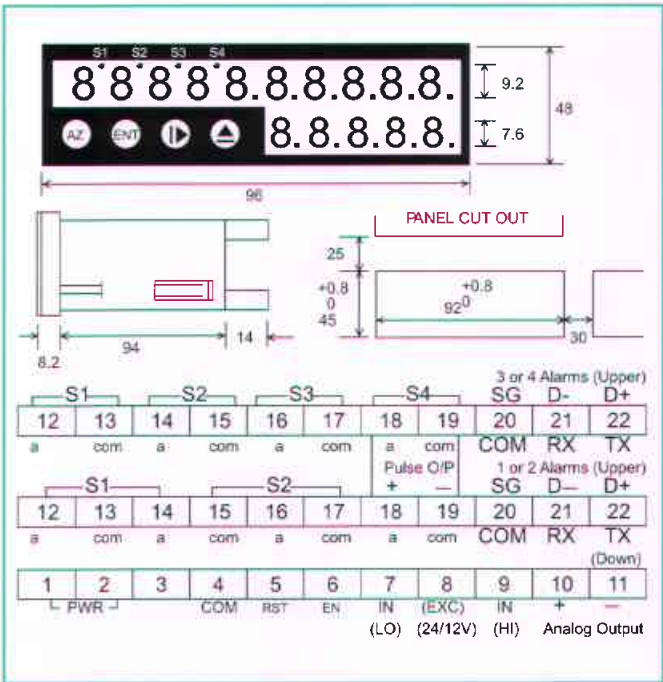
2. Specification

- Aux. power supply : AC 100~240V  $\pm 10\%$  50/60 Hz  
DC 24~70V  $\pm 10\%$   
AC/DC 24  $\pm 4\text{V}$   
DC 110V  $\pm 10\%$
- Measure accuracy : 0.03% F.S. (23  $\pm 5^\circ\text{C}$ )
- Count input type : Switch selectable current sourcing ( $\leq 5\text{mA}$ ) or current sinking ( $\leq 2.5\text{mA}$ ) or magnetic pick-up
- Count input trigger levels : Pulse ( $V_{IH}=3\text{V}$ ,  $V_{IL}=2.5\text{V}$ )  
Magnetic pick-up ( $V_{IH}\geq 30\text{mV(p-p)}$ , 40V max.) can be modified
- Max. count rates :  $\leq 15\text{KHz}$  (50% duty cycle) (pulse)  
 $\leq 15\text{KHz}$  (magnetic Pick-up)
- Sampling time : 10cycle/sec. ( $\geq 10\text{Hz}$ ) (rate)  
1 cycle/sec. ( $< 10\text{Hz}$ ) (rate)
- Over input indication : "ovEr"
- Readout (compare) range : "0" to "29999" adjustable (Rate)  
"0" to "2147483647" adjustable (Totalizer)
- Alarm selection : Rate and totalizer can be modified
- Compare hysteresis range : "0" to "999" adjustable
- Alarm action : "HI" or "Lo" adjustable
- Alarm relay contact output : AC 250V/ 3A, DC 30V/5A
- Analog output selection : Rate or totalizer can be modified
- Analog output resolution : 16 bit DAC (isolating)
- Output drive capability :  $\leq 20\text{mA}$  for voltage mode  
 $\leq 14\text{V}$  for current mode
- Output ripple (p-p) :  $\leq 0.1\%$  F.S.
- Response time :  $< 250\text{ ms}$  (0~90%)
- Pulse relay contact output : DC 100V / 0.5A  $\leq 10\text{VA}$
- Pulse open collector :  $\leq \text{DC } 30\text{V} / 40\text{mA}$
- Communication speed : 2400, 4800, 9600, 19200 bps
- RTU Data format :  $< 8, \text{N}, 1 >$ ,  $< 8, \text{N}, 2 >$ ,  $< 8, \text{E}, 1 >$ ,  $< 8, 0, 1 >$
- Communication address : "1" to "247" can be modified
- Parameter setting : Touch switches
- Memory type : Non-volatile EEPROM
- Waterproof and dustproof (front direction) (optional) : IP65(optional)
- Dielectric strength : 2KVac/1min. (power / input / output)
- Temp. coefficient : 100ppm/ $^\circ\text{C}$  (0~50 $^\circ\text{C}$ )
- Operating condition : 0~50 $^\circ\text{C}$  (20~90% RH non-condensed)
- Storage condition : 0~70 $^\circ\text{C}$  (20~90% RH non-condensed)

3. Analog output switching table

NO	Output Range	O/P Range 1-2-3-4-5-6	O/P Mode 7-8
N	Non-output	switching status	on=1 off=0
1	0 ~ 1V	1-0-1-1-1-0	1-1
2	0 ~ 5V	1-0-1-0-1-0	1-1
3	1 ~ 5V	1-1-1-0-1-1	1-1
4	0 ~ 10V	1-1-0-1-0-0	1-1
5	2 ~ 10V	1-1-1-1-0-1	1-1
6	0 ~ 1mA	0-1-1-1-1-0	0-0
7	0 ~ 10mA	1-0-1-0-1-0	0-0
8	0 ~ 20mA	1-1-0-1-0-0	0-0
9	4 ~ 20mA	1-1-1-1-0-1	0-0
S	SPECIFIED (NON-PROGRAMMABLE)		

4. Dimension and connection diagram



3. Function switches (SW1)

- | S1 | S2 |
|----|----|
| 1  | 1  |
| 2  | 2  |
| 3  | 3  |
| 4  | 4  |
- S1-1 short : pulse input
  - S1-2 short : pulse input
  - S1-3 short : Magnetic pick-up
  - S1-4 short : Magnetic pick-up
  - S2-1 short : NPN
  - S2-2 short : PNP
  - S2-3 short : 1KHz Filter
  - S2-4 short : 50KHz Filter

S2-3 and S2-4 are open for the low pass filter which is 15KHz cut-off frequency.