



Wh, VARh, VAh, Hz

Wh, VARh, VAh, Hz

VAR, VA,

V, A, PF, W, VAR, VA,

Microprocessor Power Quality Meter

PF-3050 POWER QUALITY METER



The PF Power Quality Meter utilizes a 16 bit 61.44MHz DSP digital signal converter as it's main processor to produce timely and accurate results. Complemented with 3-phase electrical power A/D switching chip, it is able to sample 6 sets of signals simultaneously (3-phase voltage and 3-phase current) to produce accurate monitoring. Apart from the industry's standard of using switching mode single module A/D converter which produces a time lag in-between sampling, the PF provides digital analysis, display, regulation, output and other functions.

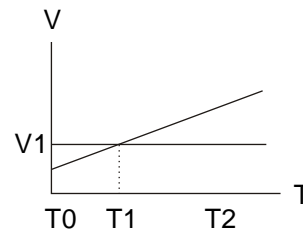
The PF, apart from displaying all electrical power units (V, A, PF, W, VAR, VA, Wh, VARh, VAh, Hz), harmonic analysis, the meter measures total harmonic distortion, odd harmonic distortion, and individual harmonic distortions for harmonics 3 through 21. it includes 2 relay outputs, availability to set max or min value for Voltage(V)/ Current(A)/ Active Power(W)/ Power Factor(PF). It also produces two pulse output for energy and reactive power (pulse/ kwh) readings. For communications interface, PF utilizes RS485 industrial standard (Modbus) to produce other output functions. The user will definitely find the PF user-friendly and easy to integrate into any systems

FEATURES

- Achieved Taiwan's CNLA Laboratory 0.2 grade electrical calibration as well as CE approval.
- Suitable for use in 3Æ3W / 3Æ4W power systems. Measured parameters: Voltage/Current/Power Factor/Active Power/ Reactive Power/Apparent Power/Power Demand/ Frequency/Active Energy/Reactive Energy/ Apparent Energy.
- Utilizes 128x64 resolution blue LCD display for improved clarity.
- Able to connect to Voltage/Current transformers up to 1~10,000 ratio and automatically calculate the actual value.
- Provides RS485-Modbus communication interface.
- 2 sets of relay outputs able to set at Voltage/Current/Active Power/Power Factor/ Power Demand/requirements.
- 2 sets of transistor output used on active energy and reactive energy.
- Password protection on set parameters.
- Highest resolution of 0.2%
- Provides ModBus (ASCII and RTU) Communication interface.
- Precise True RMS measurements.

CONTACT OUTPUT

The PF-3050 includes 2 sets of relay outputs, each available to be used on Current, Voltage, Power, PF, PD value (Before PT, CT ratio conversion). The set points could be used as high (V, I, P, PD) or low (PF) value alarm, with relay-ON when alarm is triggered. The mode of action is as below:

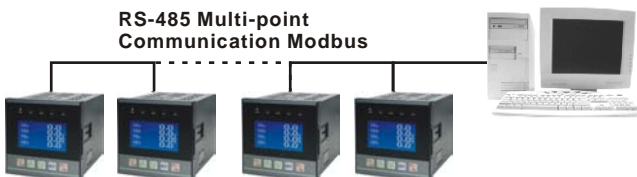


T0~T1: Relay OFF (V, I, P, PD)/Relay ON (PF)
T1~T2: Relay ON (V1I1, P1, PD)/Relay OFF (PF)

1. When V values are lower than V1 value, Relay is OFF.
2. When V values are higher than V1 value, Relay is ON.

TRANSISTOR OUTPUT:

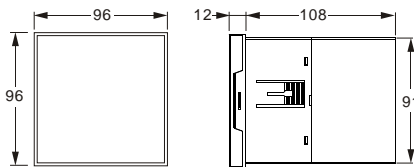
The PF-3050 include 2 sets of open collection transistor output, able to be set as alarms on power energy (KWh/KVARh) and provide pulse output when triggered (Before PT, CT ratio conversion). The output ratio is set at 10000 Pulse/ KWh and 10000 Pulse/KVARh.



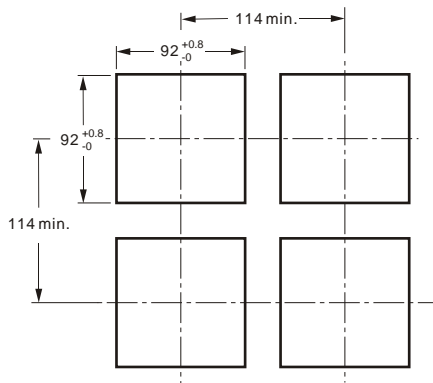
SPECIFICATIONS

Size (mm)	96 (W) x96 (H) x120 (D) DIN 1/4
Model	PF
Power Supply	100~240Vac, 50/60 Hz±10%
Display	128 X 64 Graphic LCM
Input Signal	3Æ3W / 3Æ4W V _{in} : 20~400Vac V _H : 35~700Vac I: 0.03~6A
Relay Output	SPST-ON x2, 3A/250Vac, 5A/30Vdc
Pulse Output	2 sets Open Collector Output (8~30Vdc,50mA) 1: 10,000pulse/KWh 2: 10,000pulse/KVARh
Communication Interface	RS485 ModBus
Operating Conditions	0~60°C(45~85% RH), Accuracy: 23±5°C
Storage Conditions	-10~70°C
Functions	3Æ3W / 3Æ4W Hz, V, I, P, Q, S, PF, PE, QE, SE, PD THD Harmonic 1~21'
Power/ Energy Range (User able to connect CT and PT to expand range)	Active Power: 0~7.5 KW Reactive Power: 0~7.5 KVAR Apparent Power: 0~7.5 KVA Active Energy: 0~400 MWh Reactive Energy: 0~400 MVARh Apparent Energy: 0~400 MVAh

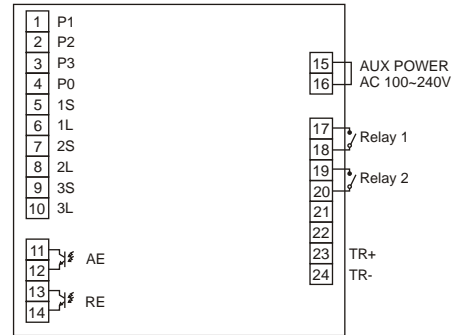
EXTERIOR



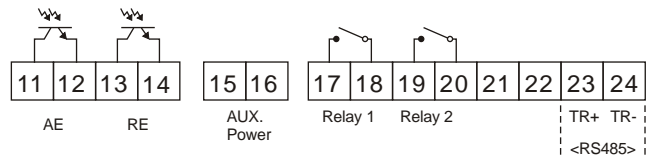
CUTOUT DIMENSIONS



TERMINAL ARRANGEMENTS:



OUTPUT WIRING:



AE: Active Energy Pulse Output
RE: Reactive Energy Pulse Output

ORDERING INFORMATION:

PF-3050-S

Relay	0---None 1---Relay output	▲
Pulse Output	0---None 1---with pulse output	▲
Communication Interface	0---None 1---RS485	▲

Example: PF- 3050- S111
Support Relay output, AE or RE pulse output and RS-458 communication

PF-3050 POWER QUALITY METER SPECIFICATIONS

Three Phase Powermeters and Analyzers

Measured Functions:		a Phase	b Phase	c Phase	Total
True RMS Voltage (Line to Neutral)	RMS total & per phase	Va	Vb	Vc	Ve
True RMS Voltage (Line to Line)		Vab	Vbc	Vca	Vle
Direct Voltage Input : 20~400V _{L-n} and 35~700 V _{L-L}	Real time total & per phase, Voltage Unbalance				
Programmable Voltage to PT Ratio : 1~10,000					
Range of Reading : 0~4,000KV _{L-n} , 0~7,000KV _{L-L}					
Accuracy : ±0.2 % FS (10 % to 120 % FS)					
3 φ 3W(Δ/Y), 3 φ 4W(Y), Input Wire Gauge max AWG14					
True RMS Current (Amps)	RMS total & per phase	Ia	Ib	Ic	Ie
Secondary Current Input : 6A	Real time total & per phase				
Programmable Voltage to CT Ratio : 1~10,000	Current Unbalance				
Range of Reading : 0~60,000 A	Max at 10 Amp				
Accuracy : ±0.2 % FS (0.5 % to 120 % FS)	Input Wire Gauge max AWG14				
Neutral Current (Amps)	RMS current				In
Range of Reading: 0~60,000 A	Real time				
Accuracy : ±0.2 % FS (2 % to 150 % FS)					
Frequency (Hz)	Total				Fr
Range of Reading: 45~65 Hz	Real time				
Accuracy : ±0.2 % FS					
Power Functions:					
Active Power (Watts)	Total & per phase	Pa	Pb	Pc	Pt
Range of Reading : -9999.9 to 9999.9 MW	Real time total & per phase				
Accuracy : ±0.35 % FS (PF ≥ 0.5)					
Reactive Power (vars)	Total & per phase	Qa	Qb	Qc	Qt
Range of Reading : -9999.9 to 9999.9 MVAR	Real time total & per phase				
Accuracy : ±0.35 % FS (PF ≥ 0.5)					
Apparent Power (VA)	Total & per phase	Sa	Sb	Sc	St
Range of Reading : 0 to 9999.9 MVA	Real time total & per phase				
Accuracy : ±0.35 % FS (PF ≥ 0.5)					
Power Factor (PF)	Total & per phase	PFa	PFb	PFc	PFt
Range of Reading : 0.0~1.000	Real time total & per phase				
Accuracy : ±0.35 % reading (PF ≥ 0.5)					

PF-3050 POWER QUALITY METER SPECIFICATIONS

Three Phase Powermeters and Analyzers

Energy Functions:		a Phase	b Phase	c Phase	Total
+Active Energy (+PE)	Total & per phase (Import)	+PEa	+PEb	+PEc	+PEt
Range of Reading : 0 to 99,999 MWh	Total Net				
Accuracy : ± 0.35 % reading ($ PF \geq 0.5$)					
-Active Energy (-PE)	Total & per phase (Export)	-PEa	-PEb	-PEc	-PEt
Range of Reading : 0 to 99,999 MWh	Total Net				
Accuracy : ± 0.35 % reading ($ PF \geq 0.5$)					
+Reactive Energy (+QE)	Total & per phase (Import)	+QEa	+QEb	+QEc	+QEt
Range of Reading : 0 to 99,999 MVARh	Total Net				
Accuracy : ± 0.35 % reading ($ PF \geq 0.5$)					
-Reactive Energy (-QE)	Total & per phase (Export)	-QEa	-QEb	-QEc	-QEt
Range of Reading : 0 to 99,999 MVARh	Total Net				
Accuracy : ± 0.35 % reading ($ PF \geq 0.5$)					
Apparent Energy (SE)	Total & per phase (Import & Export)	SEa	SEb	SEc	SEt
Range of Reading : 0 to 99,999 MVARh	Total Net				
Accuracy : ± 0.35 % reading ($ PF \geq 0.5$)					
Demand Functions:					
Active Power Demand (Watts) (same as active power)	Demand				PD
Demand Time 1~60 minute Adjustable.					
Accuracy : ± 0.35 % reading ($ PF \geq 0.5$)	Max Demand				
Power Quality Harmonics					
Voltage Harmonic Magnitude/Phase Componenta (V/deg)	1~21' per phase	H-Va	H-Vb	H-Vc	
Current Harmonic Magnitude/Phase Componenta (A/deg)	1~21' per phase	H-Ia	H-Ib	H-Ic	
Power	100~240Vac 50/60Hz ± 10 %	Transistor Output	Open collector x 2 (8~30VDC,50mA)		1: 10,000pulse/KWh 2: 10,000pulse/KVARh
Display	128 X 64 Graphics LCM	Operation temp.	0~60°C(45~85% RH),tolerance 23 ± 5 °C		
Relay output	SPST-ON x2, 3A/250Vac, 5A/30Vdc	Storage temp.	-10~70°C		

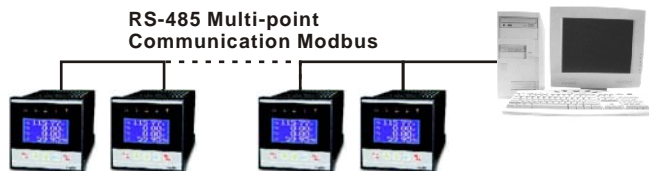
PF-3150 POWER QUALITY METER



PF-3150 Power Quality Meter uses a 3 Φ power measurement chip as its core processor, it is able to measure all power units (V, I, F, P, Q, S, PF, PE, QE, SE). The PF-3150 is equipped with 2 relay contact output which could be set to action upon user-determined values of voltage (V), current (I), Active Power (W), Power factor (PF) and Power Demand. Also available are 2 sets of transistor output with pulse/KWh and pulse/KVARh output function.

PF-3150 uses the popular MODBUS (ASCII & RTU) communication interface for its communication platform. The RS-485 connection could be arranged in parallel sequence.

PF-3150 provides many output functions that will enable the user to successfully integrate into any system.

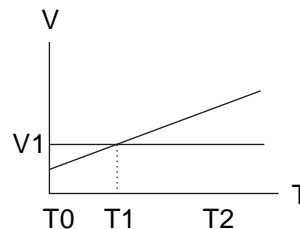


FEATURES

- Achieved Taiwan's CNLA Laboratory 0.5 grade electrical calibration as well as CE approval.
- Suitable for use in 3 Φ 3W / 3 Φ 4W power systems.
Measured parameters:
Voltage/Current/Power Factor/Active Power/
Reactive Power/Apparent Power/Power Demand/
Frequency/Active Energy/Reactive Energy/
Apparent Energy.
- Utilizes 128x64 resolution blue LCD display for improved clarity.
- Able to connect to Voltage/Current transformers up to 1~10,000 ratio and automatically calculate the actual value.
- Provides RS485-Modbus communication interface.
- 2 sets of relay outputs able to set at Voltage/Current/Power/Power Factor/Power Demand/requirements.
- 2 sets of transistor output used on active energy and reactive energy.
- Password protection on set parameters.
- Highest accuracy of 0.5%
- Provides ModBus (ASCII and RTU) Communication interface.
- Precise True RMS measurements.

CONTACT OUTPUT

The PF-3150 includes 2 sets of relay outputs, each available to be used on Current, Voltage, Power, PF, PD value (Before PT, CT ratio conversion). The set points could be used as high (V, I, P, PD) or low (PF) value alarm, with relay-ON when alarm is triggered. The mode of action is as below:



T0~T1: Relay OFF (V, I, P, PD)/Relay ON (PF)
T1~T2: Relay ON (V/I/P, PD)/Relay OFF (PF)

1. When V values are lower than V1 value, Relay is OFF.
2. When V values are higher than V1 value, Relay is ON.

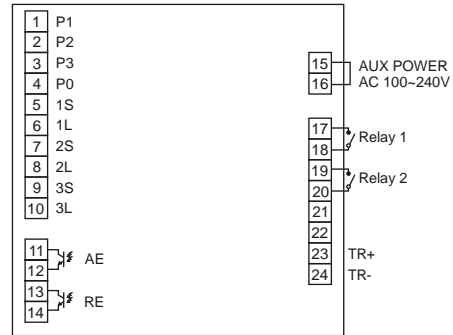
TRANSISTOR OUTPUT:

The PF-3150 include 2 sets of open collection transistor output, able to be set as alarms on power energy (KWh/KVARh) and provide pulse output when triggered (Before PT, CT ratio conversion). The output ratio is set at 1 Pulse/Wh and 1Pulse/VARh.

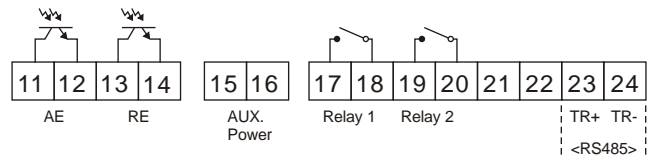
SPECIFICATIONS

Size (mm)	96 (W) x96 (H) x120 (D) DIN 1/4
Model	PF
Power Supply	100~240Vac, 50/60 Hz ±10%Hz
Display	128 X 64 Graphic LCM
Input Signal	3Æ3W / 3Æ4W V _{in} : 20~400Vac V _H : 35~700Vac I: 0.025~5A
Relay Output	SPST-ON x2, 3A/250Vac, 5A/30Vdc
Pulse Output	2 sets Open Collector Output (8~30Vdc,50mA) 1: 1pulse/Wh 2: 1pulse/VARh
Communication Interface	RS485 ModBus
Operating Conditions	0~60°C(45~85% RH), Accuracy: 23±5°C
Storage Conditions	-10~70°C
Functions	3Æ3W / 3Æ4W Hz, V, I, P, Q, S, PF, PE, QE, SE, PD
Power/ Energy Range (User able to connect CT and PT to expand range)	Active Power: 0~6000 W Reactive Power: 0~6000 VAR Apparent Power: 0~6000 VA Active Energy: 0~400 MWh Reactive Energy: 0~400 MVARh Apparent Energy: 0~400 MVAh

TERMINAL ARRANGEMENTS:

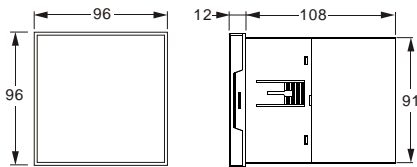


OUTPUT WIRING:

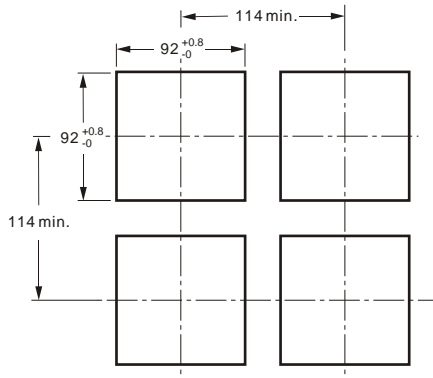


AE: Active Energy Pulse Output
RE: Reactive Energy Pulse Output

EXTERIOR



CUTOUT DIMENSIONS



ORDERING INFORMATION:

PF - 3 1 5 0 - S

Relay	0---None 1---Relay output	▲
Pulse Output	0---None 1---with pulse output	▲
Communication Interface	0---None 1---RS485	▲

Example: PF- 3150- S111
Support Relay output, AE or RE pulse output and RS-485 communication

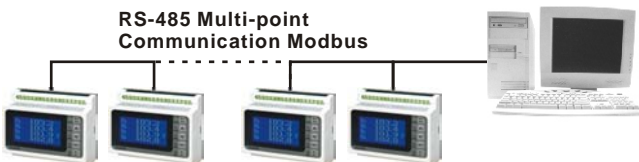
PF-3155 POWER QUALITY DIN RAIL



PF-3155 Power Quality Meter uses a 3 Φ power measurement chip as its core processor, it is able to measure all power units (V, I, F, P, Q, S, PF, PE, QE, SE). The PF-3155 is equipped with 2 relay contact output which could be set to action upon user-determined values of voltage (V), current (I), Active Power (W), Power factor (PF) and Power Demand. Also available are 2 sets of transistor output with pulse/KWh and pulse/KVARh output function.

PF-3155 uses the popular MODBUS (ASCII & RTU) communication interface for its communication platform. The RS-485 connection could be arranged in parallel sequence.

PF-3155 provides many output functions that will enable the user to successfully integrate into any system.

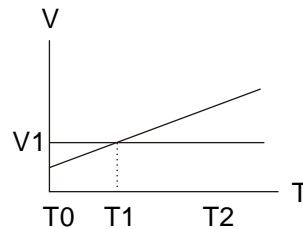


FEATURES

- Achieved Taiwan's CNLA Laboratory 0.5 grade electrical calibration as well as CE approval.
- Suitable for use in 3 Φ 3W / 3 Φ 4W power systems. Measured parameters: Voltage/Current/Power Factor/Active Power/Reactive Power/Apparent Power/Power Demand/Frequency/Active Energy/Reactive Energy/Apparent Energy.
- Utilizes 128x64 resolution blue LCD display for improved clarity.
- Able to connect to Voltage/Current transformers up to 1~10,000 ratio and automatically calculate the actual value.
- Provides RS485-Modbus communication interface.
- 2 sets of relay outputs able to set at Voltage/Current/Power/Power Factor/Power Demand/requirements.
- 2 sets of transistor output used on active energy and reactive energy.
- 2 sets of 0~20mA/ 4~20mA or 0~10V/ 2~10V Analog outputs.
- Password protection on set parameters.
- Highest accuracy of 0.5%
- Provides ModBus (ASCII and RTU)
- Communication interface.
- Precise True RMS measurements.

CONTACT OUTPUT

The PF-3155 includes 2 sets of relay outputs, each available to be used on Current, Voltage, Power, PF, PD value (Before PT, CT ratio conversion). The set points could be used as high (V, I, P, PD) or low (PF) value alarm, with relay-ON when alarm is triggered. The mode of action is as below:



T0~T1: Relay OFF (V, I, P, PD)/Relay ON (PF)
 T1~T2: Relay ON (V1I1, P1, PD)/Relay OFF (PF)

1. When V values are lower than V1 value, Relay is OFF.
2. When V values are higher than V1 value, Relay is ON.

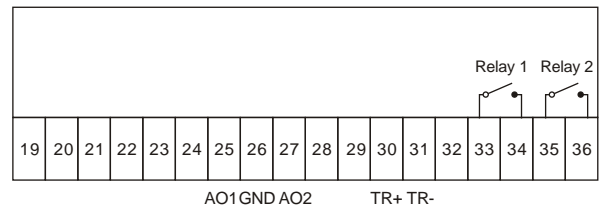
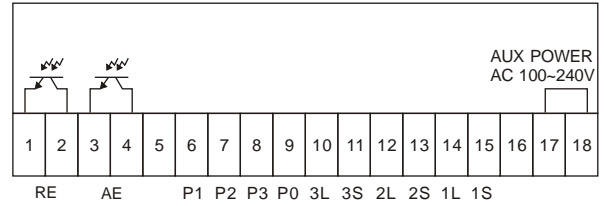
TRANSISTOR OUTPUT:

The PF-3155 include 2 sets of open collection transistor output, able to be set as alarms on power energy (KWh/KVARh) and provide pulse output when triggered (Before PT, CT ratio conversion). The output ratio is set at 1 Pulse/ Wh and 1Pulse/VARh.

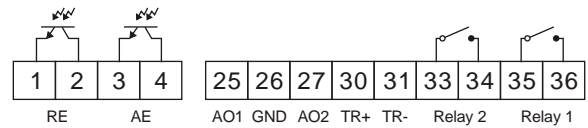
SPECIFICATIONS

Size (mm)	DIN rail 105 (W) x86.2 (H) x57.6 (D)
Model	PF
Power Supply	100~240Vac, 50/60 Hz±10%
Display	128 X 64 Graphic LCM
Input Signal	3Æ3W / 3Æ4W V _{in} : 20~400Vac V _H : 35~700Vac I: 0.025~5A
Relay Output	SPST-ON x2, 3A/250Vac, 5A/30Vdc
Pulse Output	2 sets Open Collector Output (8~30Vdc,50mA) 1: 1pulse/Wh 2: 1pulse/VARh
Analog output	2 sets of 0~20mA/ 4~20mA or 0~10V/ 2~10V Analog outputs.
Communication Interface	RS485 ModBus
Operating Conditions	0~60°C(45~85% RH), Accuracy: 23±5°C
Storage Conditions	-10~70°C
Functions	3Æ3W / 3Æ4W Hz, V, I, P, Q, S, PF, PE, QE, SE, PD
Power/ Energy Range (User able to connect CT and PT to expand range)	Active Power: 0~6000 W Reactive Power: 0~6000 VAR Apparent Power: 0~6000 VA Active Energy: 0~400 MWh Reactive Energy: 0~400 MVARh Apparent Energy: 0~400 MVAh

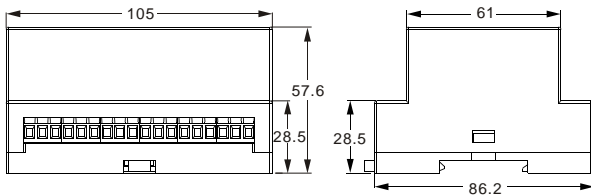
TERMINAL ARRANGEMENTS:



OUTPUT WIRING:



EXTERIOR



AE: Active Energy Pulse Output
RE: Reactive Energy Pulse Output

ORDERING INFORMATION:

PF - 3 1 5 5 - S

Relay	0---None 1---Relay output	▲
Pulse Output	0---None 1---with pulse output	▲
Communication Interface	0---None 1---RS485	▲
Analog output	0---None 1---1 set 4~20mA/ 0~10V 2---2 set 4~20mA/ 0~10V	▲

Example: PF- 3155- S111

Support Relay output, AE/ RE pulse output, RS-485 communication and set 4-20mA 0~10V analog output.

PF-3150/ 3155 POWER QUALITY METER SPECIFICATIONS

Three Phase Powermeters and Analyzers

Measured Functions:		a Phase	b Phase	c Phase	Total
True RMS Voltage (Line to Neutral)	RMS total & per phase	Va	Vb	Vc	Ve
True RMS Voltage (Line to Line)		Vab	Vbc	Vca	Vle
Direct Voltage Input : 20~400V _{L-n} and 35~700 V _{L-L}	Real time total & per phase, Voltage Unbalance				
Programmable Voltage to PT Ratio : 1~10,000					
Range of Reading : 0~4,000KV _{L-n} , 0~7,000KV _{L-L}					
Accuracy : ±0.5 % FS (10 % to 120 % FS)					
3 φ 3W(Δ/Y), 3 φ 4W(Y), Input Wire Gauge max AWG14					
True RMS Current (Amps)	RMS total & per phase	Ia	Ib	Ic	Ie
Secondary Current Input : 0.025~5A	Real time total & per phase				
Programmable Voltage to CT Ratio : 1~50,000	Current Unbalance				
Range of Reading : 0~60,000 A	Max at 10 Amp				
Accuracy : ±0.5 % FS (0.5 % to 120 % FS)	Input Wire Gauge max AWG14				
Frequency (Hz)	Total	Fa	Fb	Fc	Fe
Range of Reading : 45~65 Hz	Real time				
Accuracy : ±0.5 % FS					
Power Functions:					
Active Power (Watts)	Total & per phase	Pa	Pb	Pc	Pt
Range of Reading : -9999.9 to 9999.9 MW	Real time total & per phase				
Accuracy : ±0.5 % FS (PF ≥0.5)					
Reactive Power (vars)	Total & per phase	Qa	Qb	Qc	Qt
Range of Reading : -9999.9 to 9999.9 MVAR	Real time total & per phase				
Accuracy : ±0.5 % FS (PF ≥0.5)					
Apparent Power (VA)	Total & per phase	Sa	Sb	Sc	St
Range of Reading : 0 to 9999.9 MVA	Real time total & per phase				
Accuracy : ±0.5 % FS (PF ≥0.5)					
Power Factory (PF)	Total & per phase	PFa	PFb	PFc	PFt
Range of Reading : 0.0~1.000	Real time total & per phase				
Accuracy : ±0.5 % reading (PF ≥0.5)					

PF-3150/ 3155 POWER QUALITY METER SPECIFICATIONS

Three Phase Powermeters and Analyzers

Energy Functions:		a Phase	b Phase	c Phase	Total
Active Energy (PE)	Total & per phase	PEa	PEb	PEc	PEt
Range of Reading : 0 to 99,999 MWh	Total Net				
Accuracy : ± 0.5 % reading ($ \text{PF} \geq 0.5$)					
Reactive Energy (QE)	Total & per phase	QEa	QEb	QEc	QEt
Range of Reading : 0 to 99,999 MVARh	Total Net				
Accuracy : ± 0.5 % reading ($ \text{PF} \geq 0.5$)					
Apparent Energy (SE)	Total & per phase (Import & Export)	SEa	SEb	SEc	SEt
Range of Reading : 0 to 99,999 MVARh	Total Net				
Accuracy : ± 0.5 % reading ($ \text{PF} \geq 0.5$)					
Demand Functions:					
Active Power Demand (Watts) (same as active power)	Demand				PD
Demand Time 1~30 minute Adjustable.					
Accuracy : ± 0.5 % reading ($ \text{PF} \geq 0.5$)	Max Demand				

PF-3350 POWER QUALITY METER



PF-3350 Power Quality Meter uses a 3 Φ power measurement chip as its core processor, it is able to measure all power units (V, I, F, P, Q, S, PF, PE, QE, SE). The PF-3350 is equipped with 2 relay contact output which could be set to action upon user-determined values of voltage (V), current (I), Active Power (W), Power factor (PF) and Power Demand. Also available are 2 sets of transistor output with pulse/KWh and pulse/KVARh output function.

PF-3350 uses the popular MODBUS (ASCII & RTU) communication interface for its communication platform. The RS-485 connection could be arranged in parallel sequence.

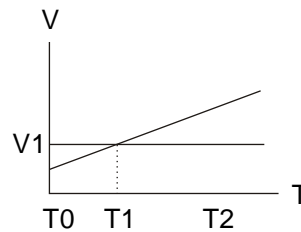
PF-3350 provides many output functions that will enable the user to successfully integrate into any system.

FEATURES

- Achieved Taiwan's CNLA Laboratory 0.5 grade electrical calibration as well as CE approval.
- Suitable for use in 3 Φ 3W / 3 Φ 4W power systems. Measured parameters: Voltage/Current/Power Factor/Active Power/Reactive Power/Apparent Power/Power Demand/Frequency/Active Energy/Reactive Energy/Apparent Energy.
- Utilizes 4 rows of four digit seven segment LED display.
- Able to connect to Voltage/Current transformers up to 1~9,999 ratio and automatically calculate the actual value.
- Provides RS485-Modbus communication interface.
- 2 sets of relay outputs able to set at Voltage/Current/Power/Power Factor/Power Demand/requirements.
- 2 sets of transistor output used on active energy and reactive energy.
- Password protection on set parameters.
- Highest accuracy of 0.5%
- Provides ModBus (ASCII and RTU) Communication interface.
- Precise True RMS measurements.

CONTACT OUTPUT

The PF-3350 includes 2 sets of relay outputs, each available to be used on Current, Voltage, Power, PF, PD value (Before PT, CT ratio conversion). The set points could be used as high (V, I, P, PD) or low (PF) value alarm, with relay-ON when alarm is triggered. The mode of action is as below:

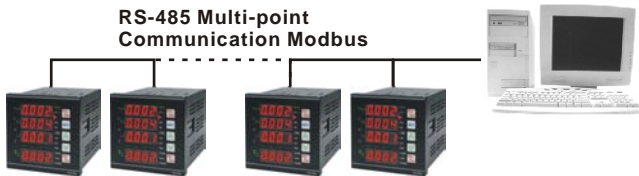


T0~T1: Relay OFF (V, I, P, PD)/Relay ON (PF)
T1~T2: Relay ON (V1I1, P1, PD)/Relay OFF (PF)

1. When V values are lower than V1 value, Relay is OFF.
2. When V values are higher than V1 value, Relay is ON.

TRANSISTOR OUTPUT:

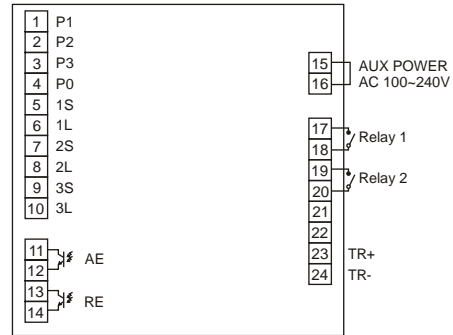
The PF-3350 include 2 sets of open collection transistor output, able to be set as alarms on power energy (KWh/KVARh) and provide pulse output when triggered (Before PT, CT ratio conversion). The output ratio is set at 1Pulse/Wh and 1Pulse/VARh.



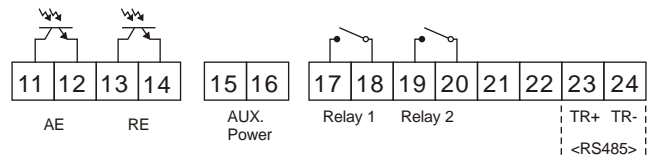
TYPICAL WIRING

SPECIFICATIONS	
Size (mm)	96 (W) x96 (H) x120 (D) DIN 1/4
Model	PF
Power Supply	100~240Vac, 50/60 Hz±10%
Display	LED
Input Signal	3Æ3W / 3Æ4W V _{in} : 20~400Vac V _H : 35~700Vac I: 0.025~5A
Relay Output	SPST-ON x2, 3A/250Vac, 5A/30Vdc
Pulse Output	2 sets Open Collector Output (8~30Vdc,50mA) 1: 1pulse/Wh 2: 1pulse/VARh
Communication Interface	RS485 ModBus
Operating Conditions	0~60°C(45~85% RH), Accuracy: 23±5°C
Storage Conditions	-10~70°C
Functions	3Æ3W / 3Æ4W Hz, V, I, P, Q, S, PF, PE, QE, SE, PD
Power/ Energy Range (User able to connect CT and PT to expand range)	Active Power: 0~6000 W Reactive Power: 0~6000 VAR Apparent Power: 0~6000 VA Active Energy: 0~400 MWh Reactive Energy: 0~400 MVARh Apparent Energy: 0~400 MVAh

TERMINAL ARRANGEMENTS:

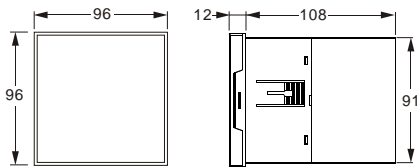


OUTPUT WIRING:

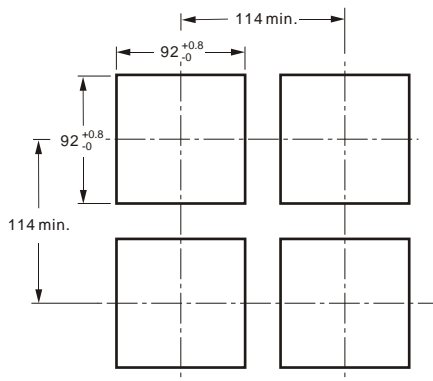


AE: Active Energy Pulse Output
RE: Reactive Energy Pulse Output

EXTERIOR



CUTOUT DIMENSIONS



ORDERING INFORMATION:

PF-3350-S

Relay	0---None 1---Relay output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pulse Output	0---None 1---with pulse output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communication Interface	0---None 1---RS485	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Example: PF- 3350- S111

Support Relay output, AE/ RE pulse output, RS-458 communication.

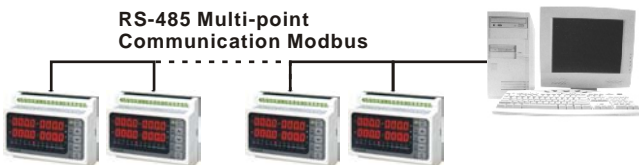
PF-3355 POWER QUALITY DIN RAIL



PF-3355 Power Quality Meter uses a 3 Φ power measurement chip as its core processor, it is able to measure all power units (V, I, F, P, Q, S, PF, PE, QE, SE). The PF-3355 is equipped with 2 relay contact output which could be set to action upon user-determined values of voltage (V), current (I), Active Power (W), Power factor (PF) and Power Demand. Also available are 2 sets of transistor output with pulse/KWh and pulse/KVARh output function.

PF-3355 uses the popular MODBUS (ASCII & RTU) communication interface for its communication platform. The RS-485 connection could be arranged in parallel sequence.

PF-3355 provides many output functions that will enable the user to successfully integrate into any system.

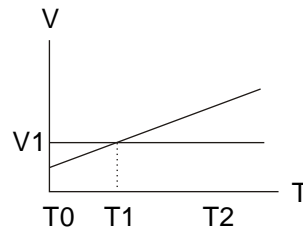


FEATURES

- Achieved Taiwan's CNLA Laboratory 0.5 grade electrical calibration as well as CE approval.
- Suitable for use in 3 Φ 3W / 3 Φ 4W power systems.
Measured parameters:
Voltage/Current/Power Factor/Active Power/
Reactive Power/Apparent Power/Power Demand/
Frequency/Active Energy/Reactive Energy/
Apparent Energy.
- Utilizes 128x64 resolution blue LCD display for improved clarity.
- Able to connect to Voltage/Current transformers up to 1~9999 ratio and automatically calculate the actual value.
- Provides RS485-Modbus communication interface.
- 2 sets of relay outputs able to set at Voltage/Current/Power/Power Factor/Power Demand/requirements.
- 2 sets of transistor output used on active energy and reactive energy.
- 2 sets of 0~20mA/ 4~20mA or 0~10V/ 2~10V Analog outputs.
- Password protection on set parameters.
- Highest resolution of 0.5%
- Provides ModBus (ASCII and RTU) Communication interface.
- Precise True RMS measurements.

CONTACT OUTPUT

The PF-3355 includes 2 sets of relay outputs, each available to be used on Current, Voltage, Power, PF, PD value (Before PT, CT ratio conversion). The set points could be used as high (V, I, P, PD) or low (PF) value alarm, with relay-ON when alarm is triggered. The mode of action is as below:



T0~T1: Relay OFF (V, I, P, PD)/Relay ON (PF)
T1~T2: Relay ON (V1I1, P1, PD)/Relay OFF (PF)

1. When V values are lower than V1 value, Relay is OFF.
2. When V values are higher than V1 value, Relay is ON.

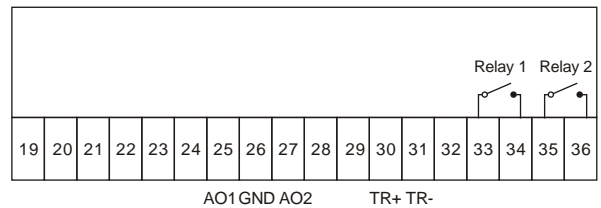
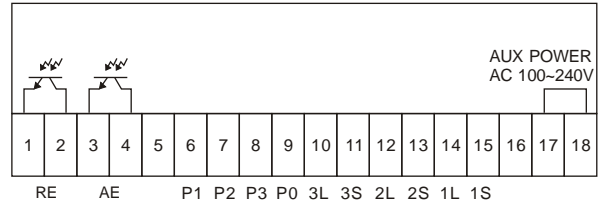
TRANSISTOR OUTPUT:

The PF-3355 include 2 sets of open collection transistor output, able to be set as alarms on power energy (KWh/KVARh) and provide pulse output when triggered (Before PT, CT ratio conversion). The output ratio is set at 1 Pulse/ Wh and 1Pulse/VARh.

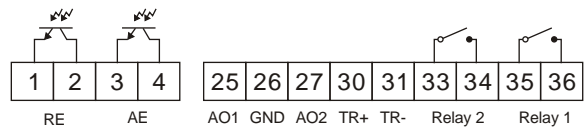
SPECIFICATIONS

Size (mm)	DIN rail 105 (W) x86.2 (H) x57.6 (D)
Model	PF
Power Supply	100~240Vac, 50/60 Hz±10%
Display	LCD
Input Signal	3Æ3W / 3Æ4W V _{in} : 20~400Vac V _H : 35~700Vac I: 0.025~5A
Relay Output	SPST-ON x2, 3A/250Vac, 3A/30Vdc
Pulse Output	2 sets Open Collector Output (8~30Vdc,50mA) 1: 1pulse/Wh 2: 1pulse/VARh
Analog output	2 sets of 0~20mA/ 4~20mA or 0~10V/ 2~10V Analog outputs.
Communication Interface	RS485 ModBus
Operating Conditions	0~60°C(45~85% RH), Accuracy: 23±5°C
Storage Conditions	-10~70°C
Functions	3Æ3W / 3Æ4W Hz, V, I, P, Q, S, PF, PE, QE, SE, PD
Power/ Energy Range (User able to connect CT and PT to expand range)	Active Power: 0~6000 W Reactive Power: 0~6000 VAR Apparent Power: 0~6000 VA Active Energy: 0~400 MWh Reactive Energy: 0~400 MVARh Apparent Energy: 0~400 MVAh

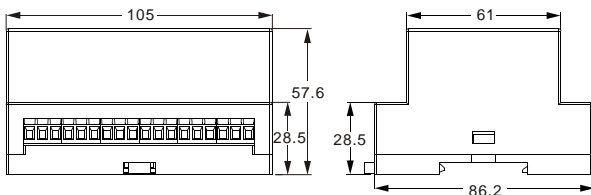
TERMINAL ARRANGEMENTS:



OUTPUT WIRING:



EXTERIOR



AE: Active Energy Pulse Output
RE: Reactive Energy Pulse Output

ORDERING INFORMATION:

PF - 3 3 5 5 - S

Relay	0---None 1---Relay output	▲
Pulse Output	0---None 1---with pulse output	▲
Communication Interface	0---None 1---RS485	▲
Analog output	0---None 1---1 set 4~20mA/ 0~10V 2---2 set 4~20mA/ 0~10V	▲

Example: PF- 3350- S111

Support Relay output, AE/ RE pulse output, RS-485 communication and set 4~20mA or 0~10V analog output.

PF-3350/ 3355 POWER QUALITY METER SPECIFICATIONS

Three Phase Powermeters and Analyzers

Measured Functions:		a Phase	b Phase	c Phase	Total
True RMS Voltage (Line to Neutral)	RMS total & per phase	Va	Vb	Vc	Ve
True RMS Voltage (Line to Line)		Vab	Vbc	Vca	Vle
Direct Voltage Input : 20~400V _{L-n} and 35~700 V _{L-l}	Real time total & per phase, Voltage Unbalance				
Programmable Voltage to PT Ratio : 1~9,999					
Range of Reading : 0~3,999.6KV _{L-n} , 0~6,999.3KV _{L-l}					
Accuracy : ± 0.5 % FS (10 % to 120 % FS)					
3 φ 3W(Δ/Y), 3 φ 4W(Y), Input Wire Gauge max AWG14					
True RMS Current (Amps)	RMS total & per phase	Ia	Ib	Ic	Ie
Secondary Current Input : 0.025~5A	Real time total & per phase				
Programmable Voltage to CT Ratio : 1~9,999	Current Unbalance				
Range of Reading : 0~49,995 A	Max at 10 Amp				
Accuracy : ± 0.5 % FS (0.5 % to 120 % FS)	Input Wire Gauge max AWG14				
Frequency (Hz)	Total	Fa	Fb	Fc	Fe
Range of Reading : 45~65 Hz	Real time				
Accuracy : ± 0.5 % FS					
Power Functions:					
Active Power (Watts)	Total & per phase	Pa	Pb	Pc	Pt
Range of Reading : -9999 to 9999 MW	Real time total & per phase				
Accuracy : ± 0.5 % FS (PF ≥ 0.5)					
Reactive Power (vars)	Total & per phase	Qa	Qb	Qc	Qt
Range of Reading : -9999 to 9999 MVAR	Real time total & per phase				
Accuracy : ± 0.5 % FS (PF ≥ 0.5)					
Apparent Power (VA)	Total & per phase	Sa	Sb	Sc	St
Range of Reading : 0 to 9999 MVA	Real time total & per phase				
Accuracy : ± 0.5 % FS (PF ≥ 0.5)					
Power Factor (PF)	Total & per phase	PFa	PFb	PFc	PFt
Range of Reading : 0.0~1.000	Real time total & per phase				
Accuracy : ± 0.5 % reading (PF ≥ 0.5)					

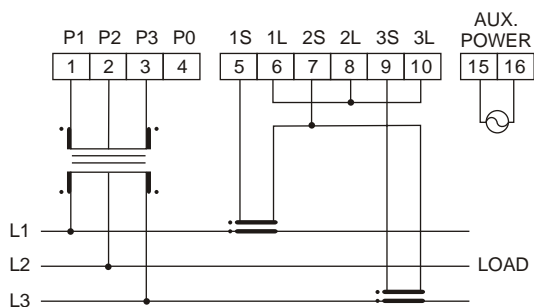
PF-3350/ 3355 POWER QUALITY METER SPECIFICATIONS

Three Phase Powermeters and Analyzers

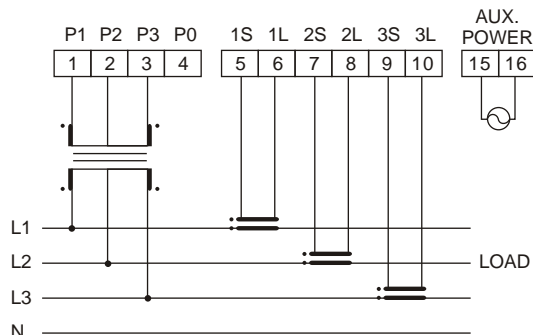
Energy Functions:		a Phase	b Phase	c Phase	Total
Active Energy (PE)	Total & per phase	PEa	PEb	PEc	PEt
Range of Reading : 0 to 9999 MWh	Total Net				
Accuracy : ± 0.5 % reading ($ PF \geq 0.5$)					
Reactive Energy (QE)	Total & per phase	QEa	QEb	QEc	QEt
Range of Reading : 0 to 9999 MVARh	Total Net				
Accuracy : ± 0.5 % reading ($ PF \geq 0.5$)					
Apparent Energy (SE)	Total & per phase (Import & Export)	SEa	SEb	SEc	SEt
Range of Reading : 0 to 9999 MVARh	Total Net				
Accuracy : ± 0.5 % reading ($ PF \geq 0.5$)					
Demand Functions:					
Active Power Demand (Watts) (same as active power)	Demand				PD
Demand Time 1~30 minute Adjustable.					
Accuracy : ± 0.5 % reading ($ PF \geq 0.5$)	Max Demand				

PF-3050/3150/3350 INPUT WIRING

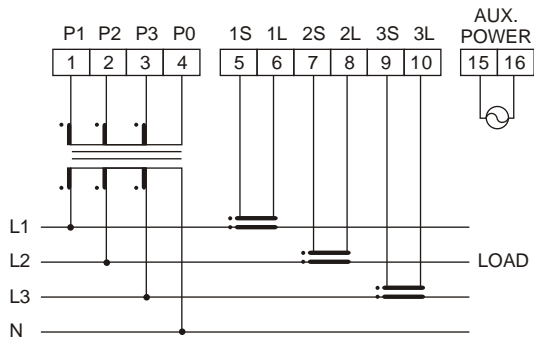
A. 3 Phase 3-Wire with 2PTs, 2CTs



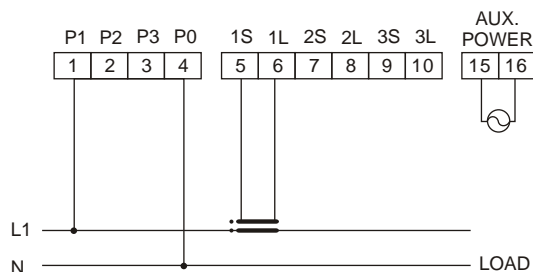
B. 3 Phase 3-Wire with 3PTs, 3CTs



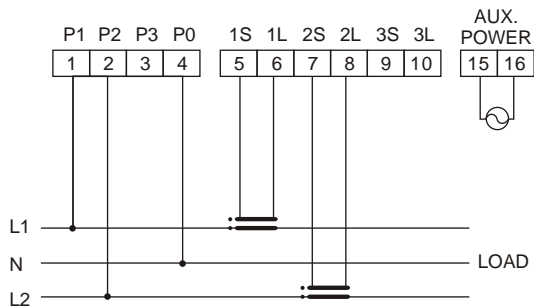
C. 3 Phase 4-Wire with 3PTs, 3CTs



D. 1 Phase 2-Wire with 1CTs (no PTs)

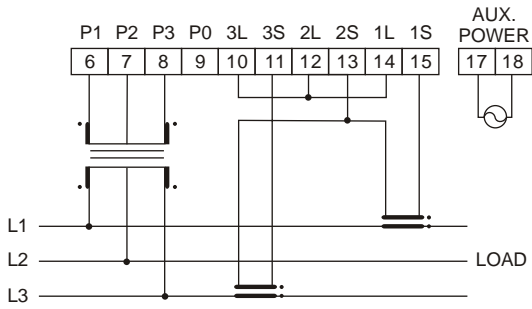


E. 1 Phase 3-Wire with 2CTs (no PTs)

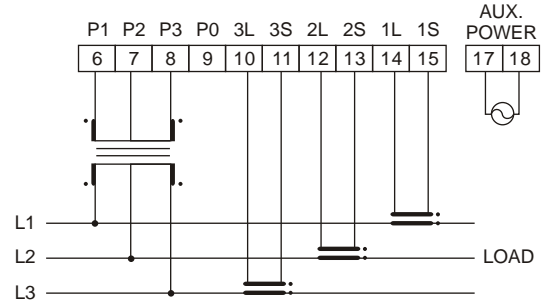


PF-3155/3355 INPUT WIRING

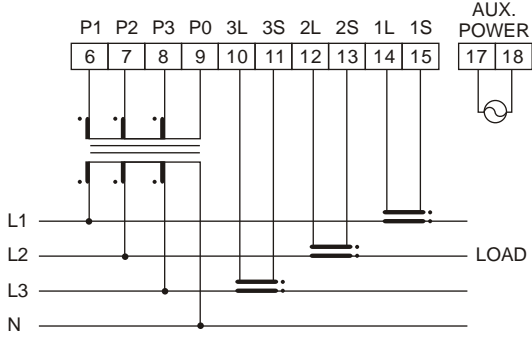
A. 3 Phase 3-Wire with 2PT, 2CT



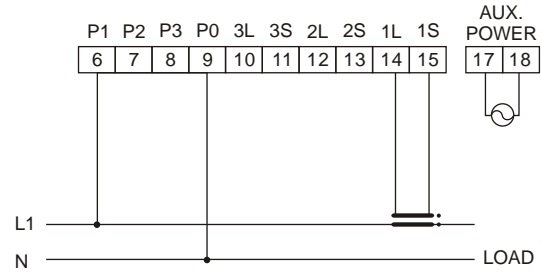
B. 3 Phase 3-Wire with 2PT, 2CT



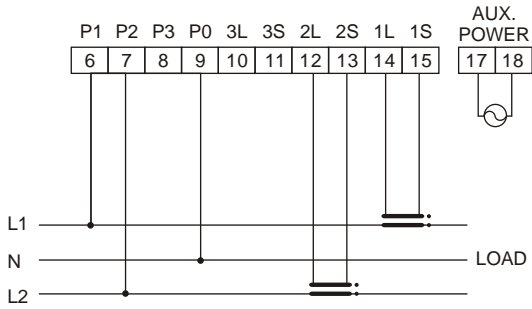
C. 3 Phase 4-Wire with 3PTs, 3CTs



D. 1 Phase 2-Wire with 1CTs (no PTs)



E. 1 Phase 3-Wire with 2CTs (no PTs)



PF-5230 WATT HOUR/VAR METER



Watt Hour Meter uses a 3Æ power measurement chip as it's core processor. It is able to measure active power and active energy (P, PE). The meter provides a transistor pulse output for active energy/reactive energy (pulse/Kwh) function.

PF-5230 uses the popular MODBUS (RTU) communication interface for its communication platform, its ease of use and various functions allows the user quick and easy integrate of the system.

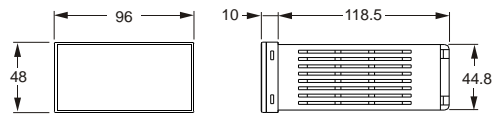
FEATURES:

- Suitable for use in 1Æ2W /1Æ3W /3Æ3W /3Æ4W a power systems. Measured parameters: active power, active energy.
- Uses dual display for active power, active energy, indication:
 - Active Power Power: 5 digits LED display.
 - Active energy Energy: 10 digits LED display.
- Able to connect to voltage transformer/ current transformer (PT/CT), Multiple 1~9999 to increase measurement range. Automatic calculation of actual values.
- Provide 1 set of transistor output. Output dependent upon active energy to produce voltage pulse.
- Provides RS-485 Modbus (RTU) communication interface.

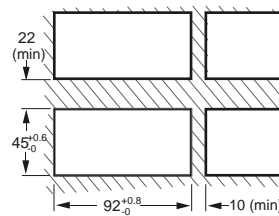
SPECIFICATIONS

Size (mm)	96 (W) x48 (H) x120 (D) DIN 1/4
Model	PF-5230
Power Supply	100~240Vac, 50/60 Hz±10%
Display	Dual Display for WATT & WATT-HR / WATT: 0~9999.9 WATT-HR: 0~199999999.9
Input	1.Direct Input Max: Voltage: 25~500 V _{r-n} and 44~866V _{L-L} Current: 0.025~5 A 2.Setting PT/CT ratio: PT ratio: 1~9999 CT ratio: 1~9999
Pulse Output	1. Open collect: 8-30V / 50mA(MAX) 2. Settable Rang: 0.001~1000 Pulse/ 1Count (KWH)/(KVARH)
Communication Interface	RS485 ModBus (RTU)
Memory	By EEPROM
Operating Conditions	0~60°C, 20%~90% RH non-condensed
Storage Conditions	0~70°C, 20%~90% RH non-condensed
Functions	WATT & WATT-HR 1Æ2W、1Æ3W、3Æ3W、3Æ4W
Accuracy	±0.5% Full Scale ± 1 Count

EXTERIOR:



CUTOUT DIMENSIONS:



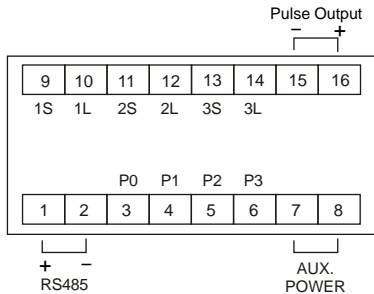
ORDERING INFORMATION:

PF-5230-S □ □ □ □

Measuring function	2---Watt Hour(10-Digital)
Power Supply	S---100~240Vac
Measuring Specification	0---1Æ2W 2---3Æ3W, 3Æ4W 1---1Æ3W
Pulse Output	0---None 1---with pulse output
Communication Interface	0---None 1---RS485

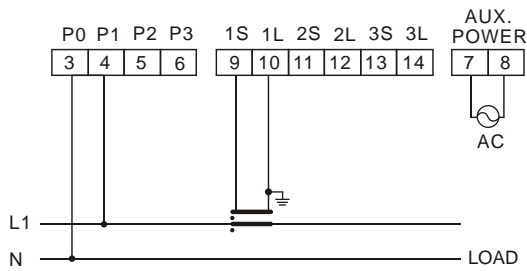
PF-5230 TERMINAL ARRANGEMENTS/TYPICAL WIRING

TERMINAL ARRANGEMENTS:

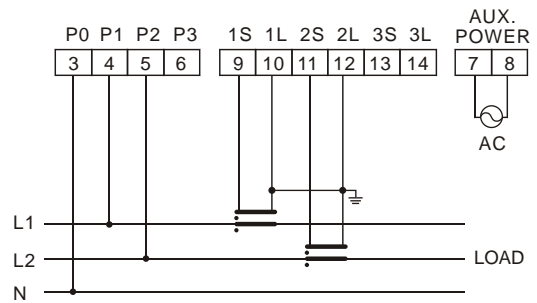


INTPUT WIRING:

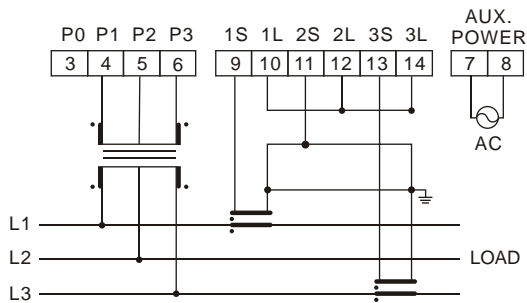
A. 1 Phase 2-Wire with 1CTs (no PTs)



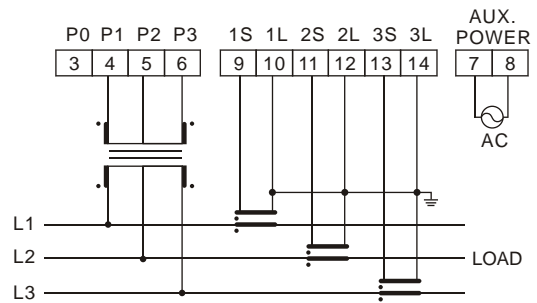
B. 1 Phase 3-Wire with 2CTs (no PTs)



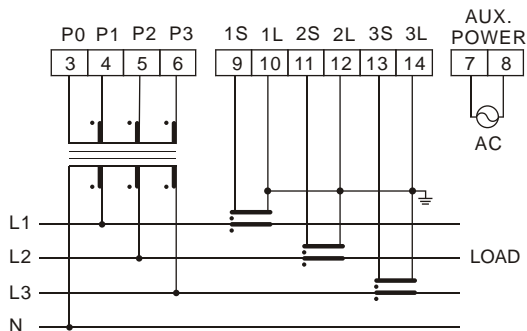
C. 3 Phase 3-Wire with 2PTs, 2CTs



D. 3 Phase 3-Wire with 3PTs, 3CTs



E. 3 Phase 4-Wire with 3PTs, 3CTs



PF-5055 WATT HOUR/VAR DIN RAIL



PF-5055 employs a chip for 3-phase power measurement as its computing core. It could measure active power and energy. There are 2 sets of relay contact output to set min/max values of V, I, W and PF. There are two more to set analog signal output of V or I to consist with output of V, I, W and PF. It also has 2 sets of transistor output and pulse/kwh functions.

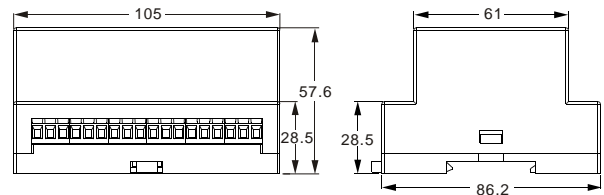
FEATURES:

- Suitable for use in 1Æ2W /1Æ3W /3Æ3W /3Æ4W apower systems. Measured parameters: active power, active energy, reactive power and reactive energy.
- Uses dual display for active power, active energy, indication:
 - Active Power Power: 10 digits LED display.
 - Active energy Energy: 10 digits LED display.
- Able to connect to voltage transformer/ current transformer (PT/CT), Multiple 1~9999 to increase measurement range. Automatic calculation of actual values.
- Provide 2 set of transistor output. Output dependent upon active energy reactive energy to produce voltage pulse.
- Provides RS-485 Modbus (ASCII & RTU) communication interface.
- 2 sets of relay outputs able to set at Voltage/Current/Power/Power Factor/Requirements.
- 2 sets of transistor output used on active energy and reactive energy.
- 2 sets of 0~20mA/ 4~20mA or 0~10V/ 2~10V Analog outputs.

SPECIFICATIONS

Size (mm)	DIN rail 105 (W) x86.2 (H) x57.6 (D)
Model	PF-5055
Power Supply	100~240Vac, 50/60 Hz±10%
Display	Dual Display for WATT & WATT-HR / WATT: 0~999999999 WATT-HR: 0~999999999
Input	1.Direct Input Max: Voltage: 20~500 V _{1-n} and 35~866V _{1-n} Current: 0.025~5 A 2.Setting PT/CT ratio: PT ratio: 1~9999 CT ratio: 1~9999
Relay Output	SPST-ON x2, 3A/250Vac, 5A/30Vdc
Pulse Output	2 sets Open Collector Output (8~30Vdc,50mA) 1: 1pulse/Wh 2: 1pulse/VARh
Analog output	2 sets of 0~20mA/ 4~20mA or 0~10V/ 2~10V Analog outputs.
Communication Interface	RS485 ModBus (RTU)
Memory	By EEPROM
Operating Conditions	0~60°C, 20%~90% RH non-condensed
Storage Conditions	0~70°C, 20%~90% RH non-condensed
Functions	WATT & WATT-HR / VAR & VAR-HR 1Æ2W、1Æ3W、3Æ3W、3Æ4W
Accuracy	±0.5% Full Scale ±1 Count

EXTERIOR:



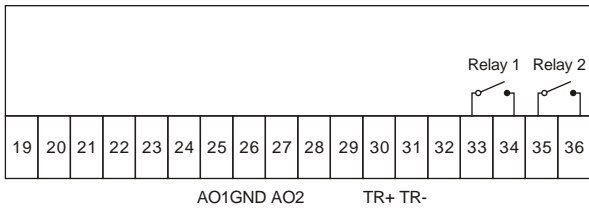
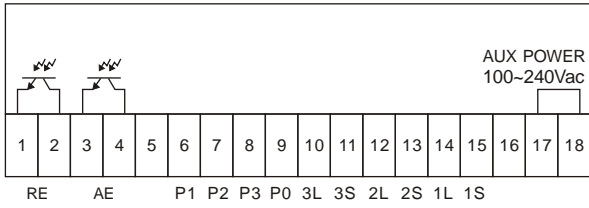
ORDERING INFORMATION:

PF-5055-S □ □ □ □

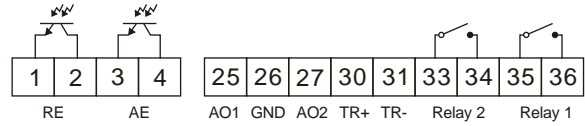
Relay	0---None 1---Relay output	▲
Pulse Output	0---None 1---with pulse output	▲
Communication Interface	0---None 1---RS485	▲
Analog output	0---None 1---1 set 4~20mA/ 0~10mA 2---2 set 4~20mA/ 0~10mA	▲

PF-5055 TERMINAL ARRANGEMENTS/TYPICAL WIRING

TERMINAL ARRANGEMENTS:



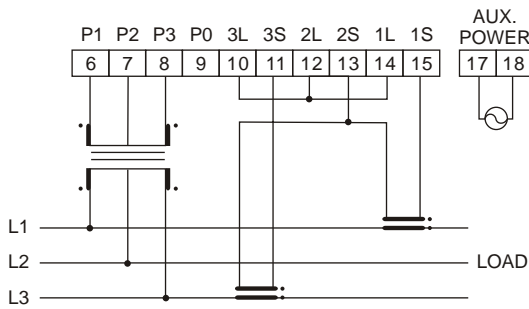
INTPUT WIRING:



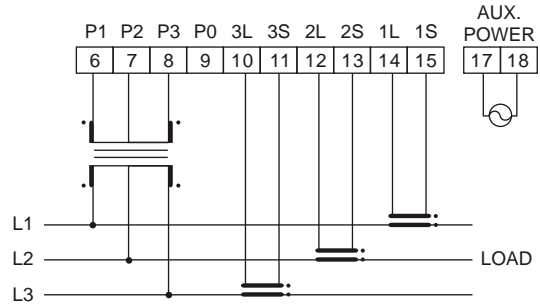
AE: Active Energy Pulse Output
RE: Reactive Energy Pulse Output

INTPUT WIRING:

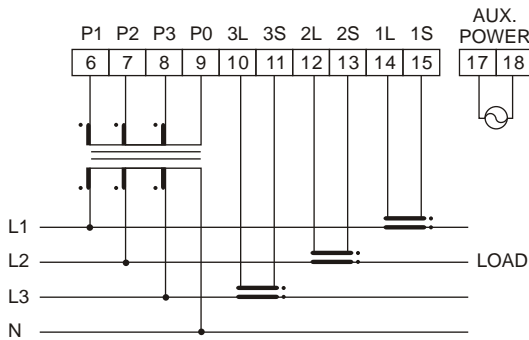
A. 3 Phase 3-Wire with 2PT, 2CT



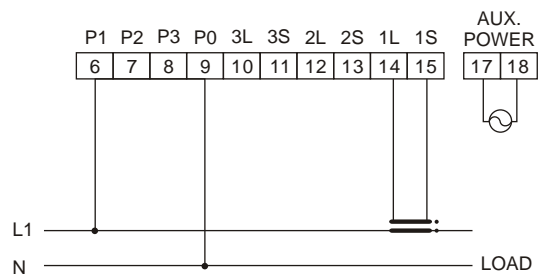
B. 3 Phase 3-Wire with 2PT, 2CT



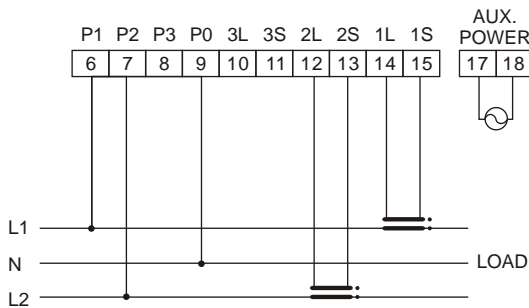
C. 3 Phase 4-Wire with 3PTs, 3CTs



D. 1 Phase 2-Wire with 1CTs (no PTs)



E. 1 Phase 3-Wire with 2CTs (no PTs)



PR-1□□85 Power Factor Controller



PR Power Factor Controller uses 3 ϕ power measuring chip as counting tool to measure power factor (PF), Phase Voltage (VLN), Line Voltage (VLL), Current (A), Active Power (Watt), Reactive Power (Var), Apparent Power (VA) and Frequency (Hz) ect...parameters. As it is designed with module, it provides 6 to 12 steps relay output function for upgrade purpose. It offers choice of 4 types of capacitance wiring and 5 types of switch mode that improves the efficiency of power factor while using the same number of relay. In communication, global recognition MODBUS(RTU) RS-485 is used to give customers more convenient and rapid functions.

FEATURES:

- Manual/Auto mode for relay switch.
- Provides three modes (on, off, re-on) of delay time setting for relay to protect the switch and the life-span of the capacitance.
- Use 0.56" indicator output with 4 digits of 7 segments output.
- Module design to give 6-12 sets of relay and 1~12 steps relay output function.
- Relay modes: 4 types of capacitance ratio and 5 types of switch mode for selection.
- Detectable for the current lower than 0.025A, overload voltage, low Voltage, overload current, low current and wrong connection for phase lines.
- Auto-Calculation for C/K value; no need for manual calculation and setting.
- Provides RS-485 ModBus interface.
- Provides the selectable functions for indicating Power Factor (PF), Phase Voltage (V_{LN}), Line Voltage (V_{LL}), Current (VA), Active Power (Watt), Reactive Power (Var), Apparent Power (VA) and Frequency (Hz).

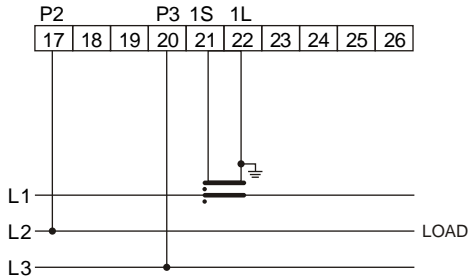
SPECIFICATIONS

Size (mm)	144 (W) x144 (H) x83 (D) DIN
Model	PR-1□□85
Display	0.56" 4 digit 7-Segments display.
Measurement	PF (0L~0C), V, I, P, Q, S, Hz
Accuracy	Balance: $\pm 1\%$ Full Scale Unbalance: $\pm 0.5\%$ Full Scale
Accuracy Guarantee Temperature Range	$\leq 100\text{PPM}/^{\circ}\text{C}$ ($\leq 60\text{PPM}/^{\circ}\text{C}$, $25 \pm 10^{\circ}\text{C}$)
Input Signal Range	Voltage: 20~500V Current: 0.025~5A
Frequency	50/60 Hz $\pm 10\%$
Output Signal	6/12 Relay Output (Option: Enable to set 1~12 steps relay function) Contact Capacity: 6A/250V
Relay Delay Time	On Delay Time: 1~3000 second Off Delay Time: 1~3000 second Re-On Delay Time: 1~3000 second
Relay Active Mode	Pro0: Unconditional cyclic control, Capacitance ratio: 1:1:1:1:1:1: ... :1:1 Pro1: Cyclic/optimum control, Capacitance ratio: 1:1:1:1:1:1: ... :1:1 Pro2: Multistep control, Capacitance ratio: 1:2:2:2:2:2: ... :2:2 Pro3: Multistep control, Capacitance ratio: 1:2:4:4:4:4: ... :4:4 Pro4: Multistep control, Capacitance ratio: 1:2:4:8:8:8: ... :8:8
Alarm Mode	Wiring Error, Low Voltage, High Voltage, Low Current, High Current and Unreached setting PF Value.
Communication Interface	RS485 Modbus, RTU Mode
Power Supply	110/220/380/440Vac $\pm 10\%$, 50/60Hz $\pm 10\%$
Operation Temperature	0~50°C, 20%~90% RH Non-Condensed
Storage condition	-10~70°C, 20%~90% RH non-condensed
Memory	By EEPROM

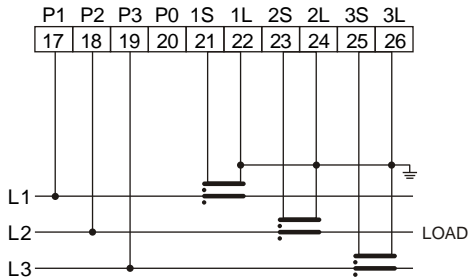
PR-1□□85 Power Factor Controller

OUTPUT WIRING:

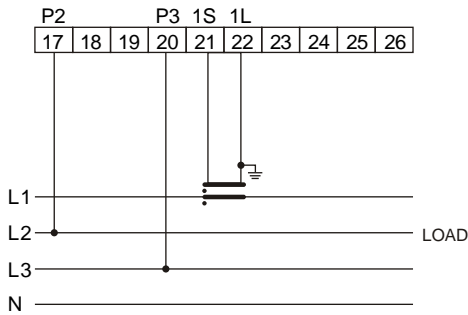
A. 3 phase 3 line balance



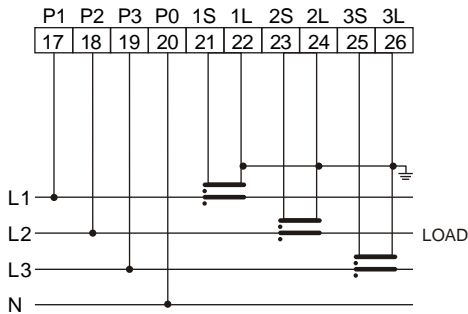
B. 3 phase 3 line unbalance



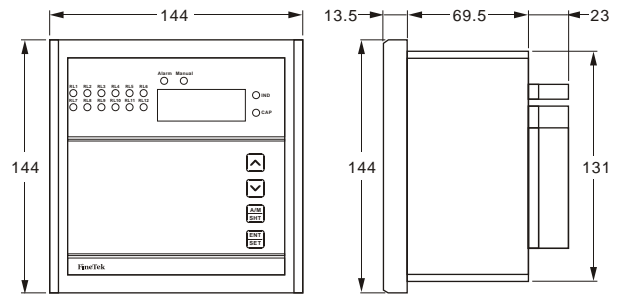
C. 3 phase 4 line balance



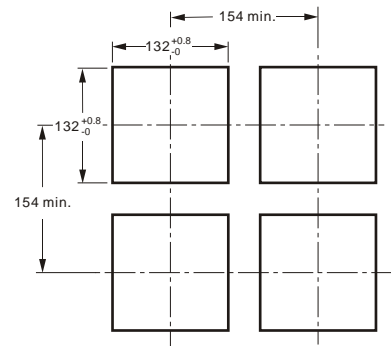
D. 3 phase 4 line unbalance



EXTERIOR:

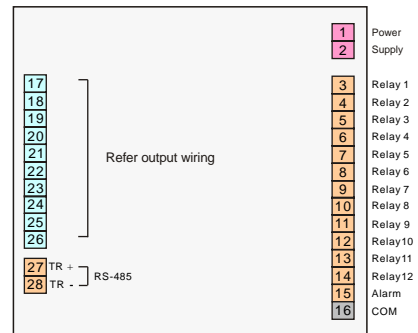


CUTOUT DIMENSIONS



TERMINAL ARRANGEMENTS:




(6/12 use the same diagram)







ORDERING INFORMATION:


PR-1□□85-□□□

Measuring Specification	06---6 Step Relay 12---12 Step Relay				
Dimension	144 x 144mm				
Measuring System	B-Balance system U-Unbalance system				
Power Supply	A---110Vac B---220Vac	G---380Vac H---440Vac			
Communication Interface	0---Non 1---RS485				

	PF-3050	PF-3150	PF-3350
Model / Features			
Available Dimension DIN (mm)	DIN 1/4 (96*96) mm	DIN 1/4 (96*96) mm	DIN 1/4 (96*96) mm
Color	Black	Black	Black
Accuracy	± 0.2% FS	± 0.5% FS	± 0.5% FS
Password Program	Yes	Yes	Yes
Functions	3Æ3W / 3Æ4W Hz, V, I, P, Q, S, PF, PE, QE, SE, PD THD Harmonic 1~21'	3Æ3W / 3Æ4W Hz, V, I, P, Q, S, PF, PE, QE, SE, PD	3Æ3W / 3Æ4W Hz, V, I, P, Q, S, PF, PE, QE, SE, PD
Measured Functions	True RMS voltage True RMS current Frequency	True RMS voltage True RMS current Frequency	True RMS voltage True RMS current Frequency
Power Functions	Active power (watts) Reactive power (vars) Apparent power (VA) Power factory (PF)	Active power (watts) Reactive power (vars) Apparent power (VA) Power factory (PF)	Active power (watts) Reactive power (vars) Apparent power (VA) Power factory (PF)
Energy Functions	+Active energy (+PE) -Active energy (-PE) +Reactive energy (+QE) -Reactive energy (-QE) Apparent energy (SE)	Active energy (PE) Reactive energy (QE) Apparent energy (SE)	Active energy (PE) Reactive energy (QE) Apparent energy (SE)
Demand Functions	Active power demand same as active power	Active power demand same as active power	Active power demand same as active power
Demand Time	1~60 minute adjustable	1~30 minute adjustable	1~30 minute adjustable
Power Quality Harmonics	1~21' average per phase	None	None
Keyboard Program	5 buttons	5 buttons	5 buttons
Display	128 x 64 Graphic LCM	128 x 64 Graphic LCM	LED
Power Supply	85~265 Vac	85~265 Vac	85~265 Vac
Operation Temp.	0~60°C	0~60°C	0~60°C
Storage Temp.	-10~70°C	-10~70°C	-10~70°C
Protection Rating	IP65	IP65	IP65
Installation	Panel mounted	Panel mounted	Panel mounted
Memory Retention	EEPROM	EEPROM	EEPROM
Relay Output	SPST-ON x 2, 250Vac/3A - 30Vac/5A	SPST-ON x 2, 250Vac/3A - 30Vac/5A	SPST-ON x 2, 250Vac/3A - 30Vac/5A
Pulse Output	2 sets Open Collector Output (8~30 Vdc, 50mA)	2 sets Open Collector Output (8~30 Vdc, 50mA)	2 sets Open Collector Output (8~30 Vdc, 50mA)
Input Signal	3Æ3W / 3Æ4W V _{in} : 20~400Vac V _{hi} : 35~700Vac I : 0.03~6A	3Æ3W / 3Æ4W V _{in} : 20~400Vac V _{hi} : 35~700Vac I : 0.025~5A	3Æ3W / 3Æ4W V _{in} : 20~400Vac V _{hi} : 35~700Vac I : 0.025~5A
Power/ Energy Range	Active Power: 0~7.5 KW Reactive Power: 0~7.5 KVAR Apparent Power: 0~7.5 KVA Active Energy: 0~400 MWh Reactive Energy: 0~400 MVARh Apparent Energy: 0~400 MVAh	Active Power: 0~6000 W Reactive Power: 0~6000 VAR Apparent Power: 0~6000 VA Active Energy: 0~400 MWh Reactive Energy: 0~400 MVARh Apparent Energy: 0~400 MVAh	Active Power: 0~6000 W Reactive Power: 0~6000 VAR Apparent Power: 0~6000 VA Active Energy: 0~400 MWh Reactive Energy: 0~400 MVARh Apparent Energy: 0~400 MVAh
Communication Interface	RS485 ModBus (RTU & ASCII)	RS485 ModBus (RTU & ASCII)	RS485 ModBus (RTU & ASCII)
Approval	CE	CE	CE

	PF-3155	PF-3355
Model / Features		
Available Dimension DIN (mm)	DIN rail 105x86.2x57.6 mm	DIN rail 105x86.2x57.6 mm
Color	White	White
Accuracy	± 0.5% FS	± 0.5% FS
Password Program	Yes	Yes
Functions	3Æ3W / 3Æ4W Hz,V,I,P,Q,S,PF,PE,QE,SE,PD	3Æ3W / 3Æ4W Hz,V,I,P,Q,S,PF,PE,QE,SE,PD
Measured Functions	True RMS voltage True RMS current Frequency	True RMS voltage True RMS current Frequency
Power Functions	Active power (watts) Reactive power (vars) Apparent power (VA) Power factory (PF)	Active power (watts) Reactive power (vars) Apparent power (VA) Power factory (PF)
Energy Functions	Active energy (PE) Reactive energy (QE) Apparent energy (SE)	Active energy (PE) Reactive energy (QE) Apparent energy (SE)
Demand Functions	Active power demand same as active power	Active power demand same as active power
Demand Time	1~30 minute adjustable	1~30 minute adjustable
Power Quality Harmonics	None	None
Keyboard Program	5 buttons	5 buttons
Display	128 x 64 Graphic LCM	LED
Power Supply	85~265 Vac	85~265 Vac
Operation Temp.	0~60°C	0~60°C
Storage Temp.	-10~70°C	-10~70°C
Protection Rating	IP65	IP65
Installation	Panel mounted	Panel mounted
Memory Retention	EEPROM	EEPROM
Relay Output	SPST-ON x 2, 250Vac/3A、30Vac/5A	SPST-ON x 2, 250Vac/3A、30Vac/5A
Pulse Output	2 sets Open Collector Output (8~30 Vdc, 50mA)	2 sets Open Collector Output (8~30 Vdc, 50mA)
Analog output	2 sets of 0~20mA/ 4~20mA or 0~10V/ 2~10V Analog outputs.	2 sets of 0~20mA/ 4~20mA or 0~10V/ 2~10V Analog outputs.
Input Signal	3Æ3W / 3Æ4W V _{in} : 20~400Vac V _{in} : 35~700Vac I : 0.025~5A	3Æ3W / 3Æ4W V _{in} : 20~400Vac V _{in} : 35~700Vac I : 0.025~5A
Power/ Energy Range	Active Power: 0~6000 W Reactive Power: 0~6000 VAR Apparent Power: 0~6000 VA Active Energy: 0~400 MWh Reactive Energy: 0~400 MVARh Apparent Energy: 0~400 MVAh	Active Power: 0~6000 W Reactive Power: 0~6000 VAR Apparent Power: 0~6000 VA Active Energy: 0~400 MWh Reactive Energy: 0~400 MVARh Apparent Energy: 0~400 MVAh
Communication Interface	RS485 ModBus (RTU & ASCII)	RS485 ModBus (RTU & ASCII)
Approval	CE	CE

	PF-5230	PF-5055
Model / Features		
Available Dimension DIN (mm)	DIN 1/8 (96*48) mm	DIN rail 105x86.2x57.6 mm
Color	Black	White
Accuracy	±0.5% FS	±0.5% FS
Functions	Active power/Active energy	Active power/Active energy
Keyboard Program	4 buttons	5 buttons
Display	Dual Display for Watt & Watt-hour Watt: 0~99999 Watt-hour: 0~199999999.9	Dual Display for Watt & Watt-hour Watt: 0~999999999 Watt-hour: 0~999999999
Power Supply	85~265 Vac	85~265 Vac
Operation Temp.	0~60°C	0~60°C
Storage Temp.	-10~70°C	-10~70°C
Protection Rating	IP65	IP65
Installation	Panel mounted	DIN rail
Memory Retention	EEPROM	EEPROM
Pulse Output	1.Open Collect: (8~30 Vdc, 50mA) 2.Settable Range: 0.001~1000 pulse / 1 Count (KWH) (KVARH)	2 sets Open Collector Output (8~30 Vdc, 50mA)
Input Signal	1.Direct Input Max: Voltage: 50~500 V _{in} and 86.6~866V _{in} Current: 0.025~5 A 2.Setting PT/CT ratio: PT ratio: 1~9999 CT ratio: 1~9999	SPST-ON x 2, 250Vac/3A, 30Vac/5A 2 sets of 0~20mA/ 4~20mA or 0~10V/ 2~10V Analog outputs. 1.Direct Input Max: Voltage: 25~500 V _{in} and 44~866V _{in} Current: 0.025~5 A 2.Setting PT/CT ratio: PT ratio: 1~9999 CT ratio: 1~9999
Input Signal	RS485 ModBus (RTU)	RS485 ModBus (RTU & ASCII)
Approval	CE	CE

PR-10685/ PR-11285	
Model / Features	
Available Dimension DIN (mm)	144x144x83 mm
Color	Black
Accuracy	Balance system: $\pm 1\%$ Full Scale Unbalance system: $\pm 0.5\%$ Full Scale
Power Supply	110V / 220V / 380 / 440 Vac
Frequency	50 / 60 Hz
Temp. Coefficients	$\leq 100\text{PPM}/^\circ\text{C}$ ($\leq 60\text{PPM}/^\circ\text{C}$, $25 \pm 10^\circ\text{C}$)
Operation Temp.	0~50°C
Storage Temp.	-10~70°C
Hum.	20%~90%
Protect	IP65
Wiring	1Æ, VI-I / 3Æ
Measurement	PF(0.001L-0.001C), V, I, P, Q, S, Hz
Input Range	Voltage : 20~500 V Current : 0.025~5 A 45 / 65 Hz
Relay Time Delay	Recovery delay time: 1~3000 sec Break delay time: 1~3000sec Resume delay time: 1~3000sec
Output	Continuous relay output (can be set up to 12 steps): Contact Type: "a" contact Contact Rating AC 3 A/ 250 V DC 5 A/ 30 V
Communication Protocol	RS485 ModBus (RTU)

Microprocessor Instruments

Bargraph/ Digital display Panel Meter

- Switching power supply 85~265 Vac or 18~36 Vdc
- Wide range of user definable scaling ratio.
- SIM (Signal Input Module) available for different application.
- Isolation in Analog / Relay output.
- Support Non-Linear tank volume conversion.
- RS485 ModBus communication.



CE



CE

Microprocessor Based Counter

- Switching power supply 85~265 Vac
- Counting Speed: 20 K cps (Solid-state), 30 cps (Contact)
- Decimal point setting
- Timer display (user set h/min. min/s or s/0.1s)
- Adjustable output delay timing
- Speed units: Second, Minute, Hour
- Includes multi-parameters for Counter, Timer, Batch-counter, Chronometer, Tachometer
- Data retention & RS485 ModBus communication

Digital Panel Indicator

- 0.56" Large 7-Segment LED Display
- Low Cost and Accurate Panel Indicator
- Support all process signals, AC Voltage, DC Voltage, AC Current and DC Current Measurement.
- IP-65 Class Front Panel



CE

PID+Fuzzy Temperature Controller

- ON/OFF, PID+Fuzzy Control
- Auto-tuning, High Accuracy
- Sensor Break Alarm
- Switching Power Supply 85~265 Vac or 18~36 Vdc
- Lock Protection for Variety Parameters Heating / Cooling Bi-directional Control Multi-Input Signals Function Heater Break Detection RS485 ModBus communication



CE



CE

Microprocessor Based Power Quality Meter

- 0.2 grade electrical calibration as well as CE approval
- Monitoring RMS Voltage, Current, Frequency, Power Factor
- Monitoring Active Power (Watts), Reactive Power (Vars), Apparent Power (VA)
- Monitoring Active Energy (Mwh), Reactive Energy (MVarh), Apparent Energy (MVAh)
- Power Quality Harmonics: THD Voltage, THD Current Harmonic distortion
- Password protection on parameters setting
- Provides RS485 ModBus communication interface

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