

Power Measurement Unit

PM 2214

Application and features

- ⊙ Power supervision / SCADA system
- ⊙ Feeder automation / customized
- ⊙ 0.05% high accuracy
- ⊙ Cost saving for 4 feeder transducers
- ⊙ Power quality analysis IEC 61000-4-30
- ⊙ Speedy real data conversion rate up to 1 cycle



Specification

1. Unit configuration

1-1 Processing and interface

CPU	32 bits
Comports	Main : RS-485 / option : LAN – RJ45 Diagnostic : RS-232
Protocol	Modbus RTU

1-2 Inputs

Voltages / main bus	Software setup	Detection (* vector composed)
	3U – 3 phase 4 wires	Va, Vb, Vc, *V0 ; *Vab, *Vbc, *Vca
Currents / 4 feeders	3U – 3 phase 3 wires	*Va, *Vb, *Vc ; Vab, Vbc, *Vca
	3I / Ia, Ib, Ic	Ia, Ib, Ic, *I0
Input setup and wiring	2I / Ia, Ic	Ia, *Ib, Ic
	3P4W 3CT / 3U12I	
	3P3W 3CT / 3U12I 3P3W 2CT / 3U8I	
Conversion	3 elements	P, Q (P1, P2, P3, Q1, Q2, Q3)
	ADC 16 bits with 8 synchronized channels	
	Rate of real data conversion, 1-32 cycle adjustable	

1-3 Power quality analysis (option)

IEC 61000-4-30
 Harmonic analysis
 Voltage dips
 Voltage unbalance (negative and zero sequence)
 Voltage flicker ΔV_{10}
 Voltage low frequency spectrum (0.5-5Hz)

1-4 Waveform recording (option)

Ring buffer, length of 16 cycles total 1728 samples / three phase phasor
 AC waveform 36 samples / cycle
 Trend of speedy real rms datas 36 samples / cycle for VRMS, ARMS
 5 three phase phasors maximum



HSIANG CHENG ELECTRIC CORP.

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2. Input ranges

Voltages	Frequency : 45 – 65 Hz 10 – 300V phase to neutral Maximum over $\leq 1000V_{rms}$, 2 seconds Input resistance $\geq 1M\Omega$
Currents	CT 5A (0 ~ 6A) or CT 1A (0 ~ 1.2A) Maximum over 3 x CT continuous : $\leq 25 \times CT$, 2 seconds : $\leq 50 \times CT$, 1 seconds Burden $\leq 0.1VA$ for 1 x CT input

3. Measured parameters

3-1 Normal parameters

	25 \pm 5 $^{\circ}C$ Stability $\leq 50PPM$ (-10~50 $^{\circ}C$) , $\leq 70PPM$ (-30~70 $^{\circ}C$)
System frequency (Hz)	⊙ 0.05% of nominal frequency
Voltage (RMS)	⊙ 0.2% of nominal voltage Voltages phase to neutral, phase and Σ Voltages phase to phase, line and Σ
Current (RMS)	⊙ 0.5% of nominal voltage for V_0 ⊙ 0.2% of nominal CT, I_a , I_b , I_c and Σ ⊙ 0.5% of nominal CT for I_0
Active power (W)	⊙ 0.5% of (nominal voltage x CT), phase and Σ
Reactive power (Var)	⊙ 0.5% of (nominal voltage x CT), phase and Σ
Active energy (WH)	⊙ 0.5% of (Equate to Active Power), Σ each Feeder
Reactive energy (VarH)	⊙ 0.5% of (Equate to Reactive Power) , Σ each Feeder
Power factor (PF)	⊙ 0.5% (each phase and Feeder)
Phase angle	⊙ 0.5 $^{\circ}$ for A-V (each phase)
Phase rotation	⊙ Auto-detection

3-2 Power quality parameters

Sequence (voltage)	⊙ 0.2% of nominal voltage Positive sequence Negative sequence Zero sequence
Voltage unbalance	⊙ 0.2% of positive sequence voltage Zero sequence unbalance (%) Negative sequence unbalance (%)
Distortion in harmonics	Analysis in V_a , V_b , V_c , I_a , I_b , I_c Analysis with fundamental and 2 th to 17 th Distortion, HD-F and THD-F
Voltage flicker	ΔV_{10} (%)
Spectrum of low frequency	0.5 – 1 – 2 – 3 – 4 – 5 Hz
Voltage dips	Pick up with time inversed curve

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4. Electrical characteristics

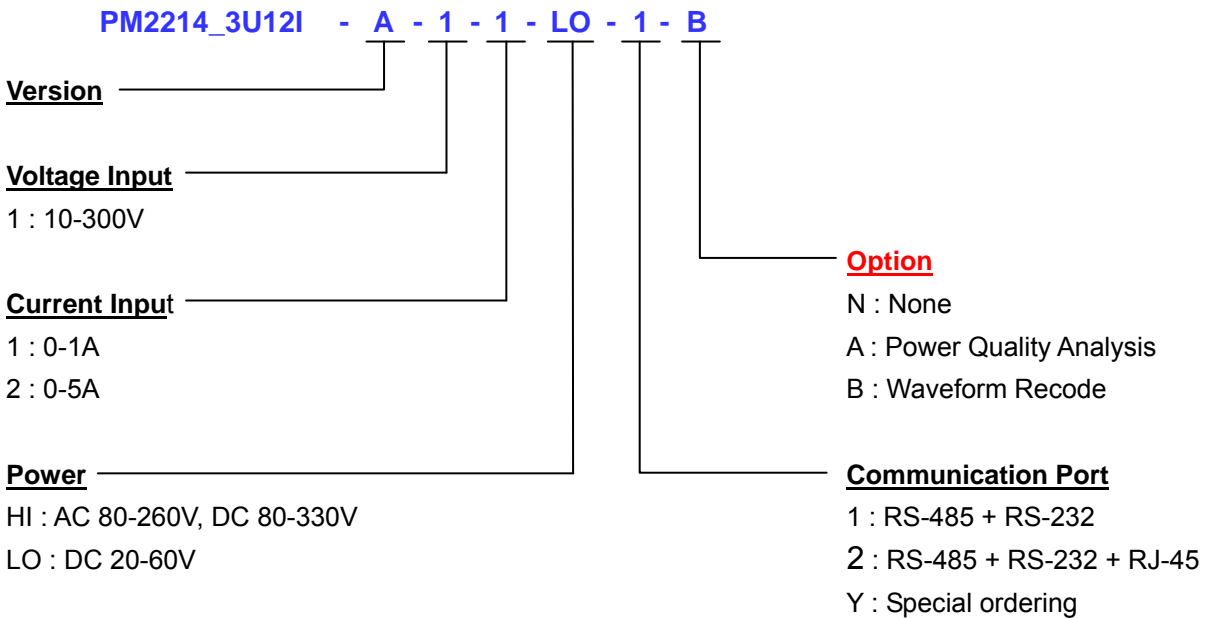
Dielectric strength	◎ IEC 255-5, 2KV ACRMS 1 minute
Impulse and surge	◎ IEC 61000-4-2, class III IEC 61000-4-3, class III IEC 61000-4-4, class III IEC 61000-4-5, class III IEC 61000-4-12, class III
Safety	◎ IEC 60068-2 standard for burn-in test : operating Temperature cycling test -40 to 85°C (start at -40 to 85°C, 2 cycle 8 hours), RH 10 to 95% non-condensed High temperature test 85°C RH 55% 16 hours Temperature / humidity cycling test 40°C RH 95% 16 hours ◎ IEC 60068-2-6 : Vibration endurance 2G 9-350Hz 1 hour ◎ IEC 60068-2-27 : Mechanical shock test 15G 11ms 24 hours
Power supply	LO : DC 20~60V HI : AC 80~260V @ 40~70 Hz, DC 80~330V Dissipation maximum 10 VA for AC and 5W for DC



5. Model & Ordering

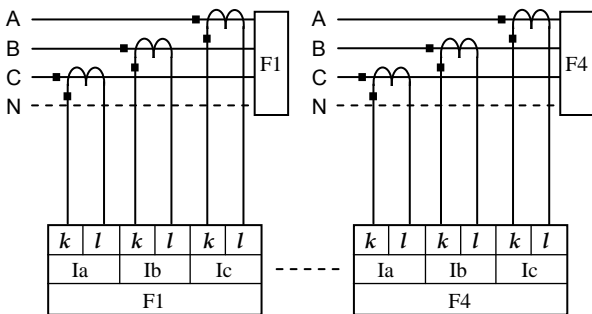
Model : PM 2214

Ordering :

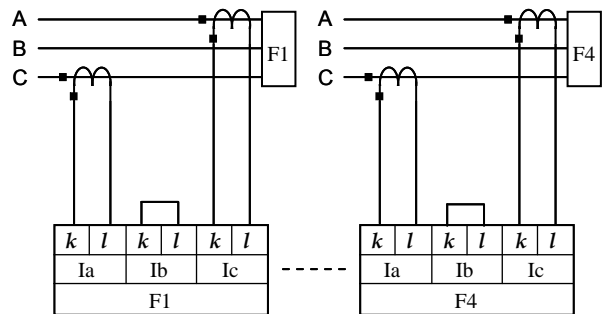


6. Wiring

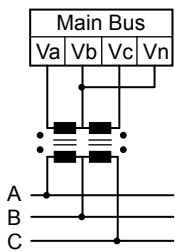
3 Current (Ia, Ib, Ic) for 3P4W, 3P3W



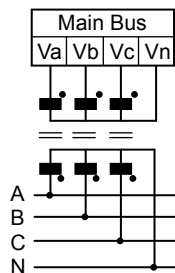
2 Current (Ia, Ic) for 3P3W



3 phase 3 wires 3U input



3 phase 4 wires 3U input



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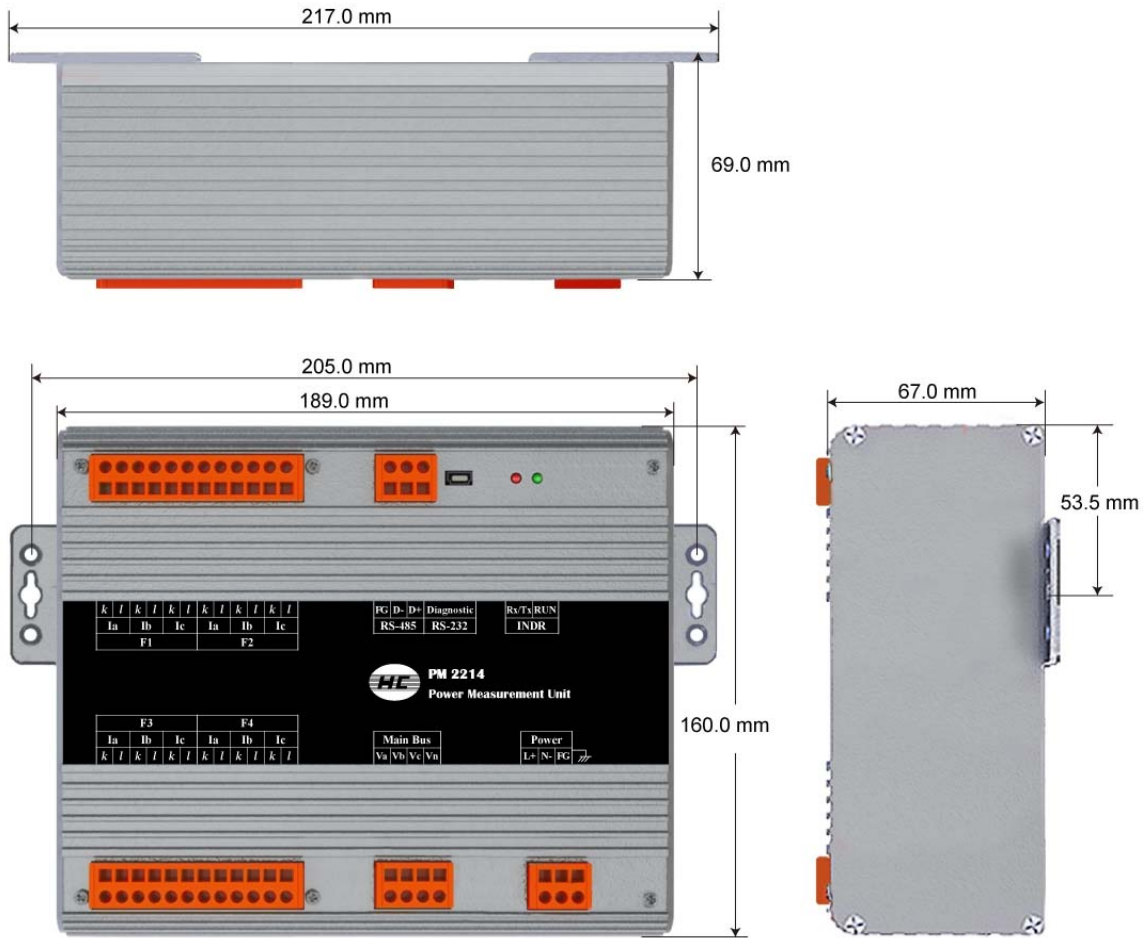
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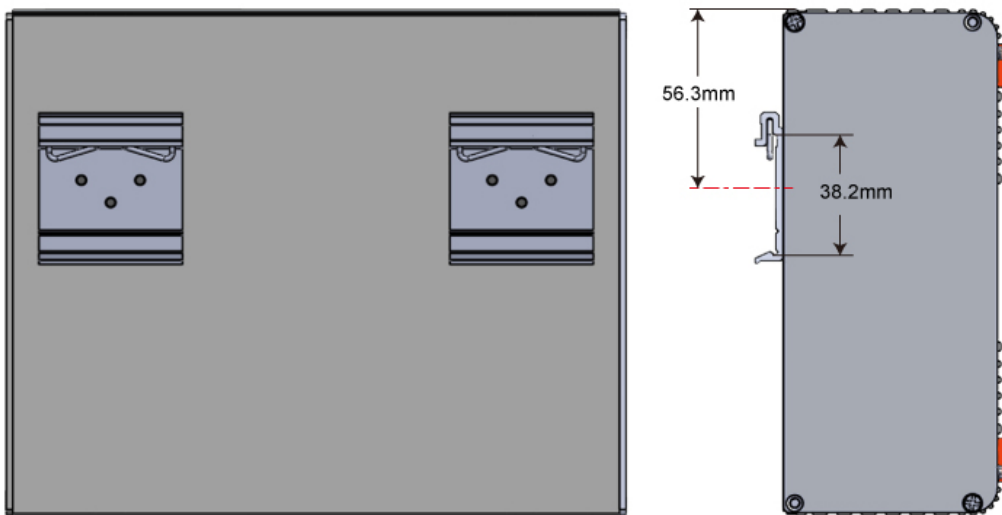
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7. Dimension/Mount



Din Rail Mount (with 35 mm)



8. Wight = 1100g ± 50g



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