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

	Software setup	Detection (* vector composed)
Voltages / main bus	3U – 3 phase 4 wires	Va, Vb, Vc, *V0 ; *Vab, *Vbc, *Vca
	3U – 3 phase 3 wires	*Va, *Vb, *Vc ; Vab, Vbc, *Vca
Currents / 4 feeders	3I / Ia, Ib, Ic	Ia, Ib, Ic, *I0
	2I / Ia, Ic	Ia, *Ib, Ic
Input setup and wiring	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 $\triangle V_{10}$
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

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2. Input ranges

Voltages	Frequency : 45 – 65 Hz
	10 – 300V phase to neutral
	Maximum over ≦1000Vrms, 2 seconds
	Input resistance ≧1MΩ
Currents	CT 5A (0 ~ 6A) or CT 1A (0 ~ 1.2A)
	Maximum over
	3 x CT continuous : ≦25 x CT, 2 seconds : ≦50 x CT, 1 seconds
	Burden ≦0.1VA for 1 x CT input

3. Measured parameters

3-1 Normal parameters

	25±5℃
	Stability
	≦ 50PPM (-10~50℃) , ≦ 70PPM (-30~70℃)
System frequency (Hz)	◎ 0.05% of nominal frequency
Voltage (RMS)	◎ 0.1% of nominal voltage
	Voltages phase to neutral, phase and Σ
	Voltages phase to phase, line and Σ
	◎ 0.2% of nominal voltage for V_0
Current (RMS)	◎ 0.1% of nominal CT, Ia, Ib, Ic and Σ
	◎ 0.2% of nominal CT for I_0
Active power (W)	◎ 0.3% of (nominal voltage x CT), phase and Σ
Reactive power (Var)	◎ 0.3% of (nominal voltage x CT), phase and Σ
Active energy (WH)	◎ 0.3% of (Equate to Active Power), Σ each Feeder
Reactive energy (VarH)	◎ 0.3% of (Equate to Reactive Power) , Σ each Feeder
Power factor (PF)	◎ 0.3% (each phase and Feeder)
Phase angle	◎ 0.5° 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 Va, Vb, Vc, Ia, Ib, Ic
	Analysis with fundamental and 2^{th} to 17^{th}
	Distortion, HD-F and THD-F
Voltage flicker	$\triangle V_{10}$ (%)
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℃ (start at -40 to 85℃, 2 cycle 8 hours), RH 10 to 95% non-condensed High temperature test 85℃ RH 55% 16 hours Temperature / humidity cycling test 40℃ 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

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5. Model & Ordering

Model : PM 2214

Ordering :

PM2214_3U12I - A - 1 - 1 - LO - 1 - B

Version

Voltage Input
1 : 10-300V

Current Input
1 : 0-1A
2 : 0-5A

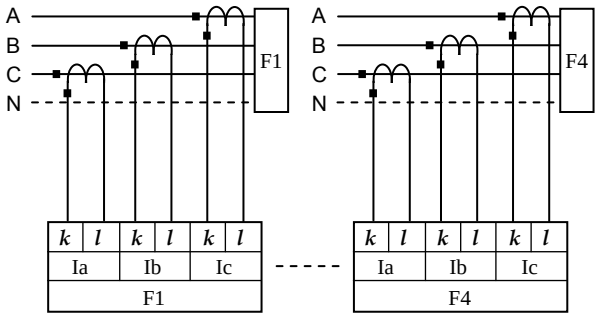
Power
HI : AC 80-260V, DC 80-330V
LO : DC 20-60V

Option
N : None
A : Power Quality Analysis
B : Waveform Recode

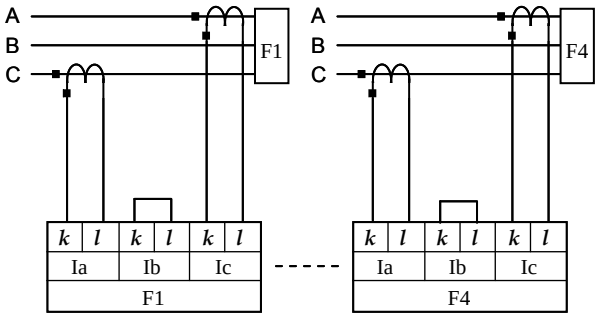
Communication Port
1 : RS-485 + RS-232
2 : RS-485 + RS-232 + RJ-45
Y : Special ordering

6. Wiring

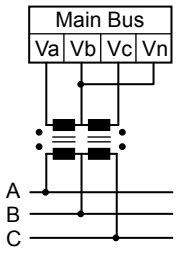
3 Current (Ia, Ib, Ic) for 3P4W, 3P3W



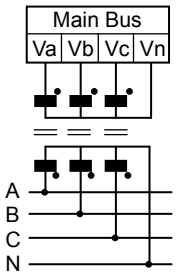
2 Current (Ia, Ic) for 3P3W



3 phase 3 wires 3U input

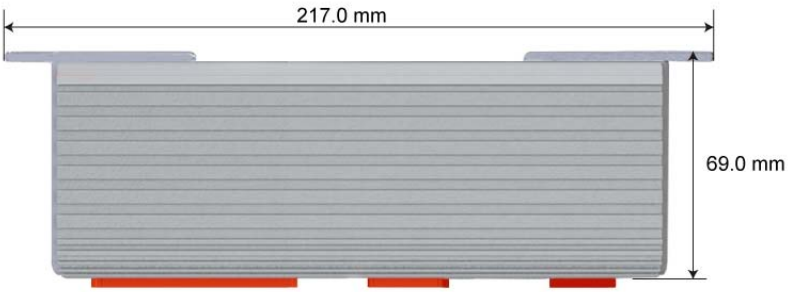


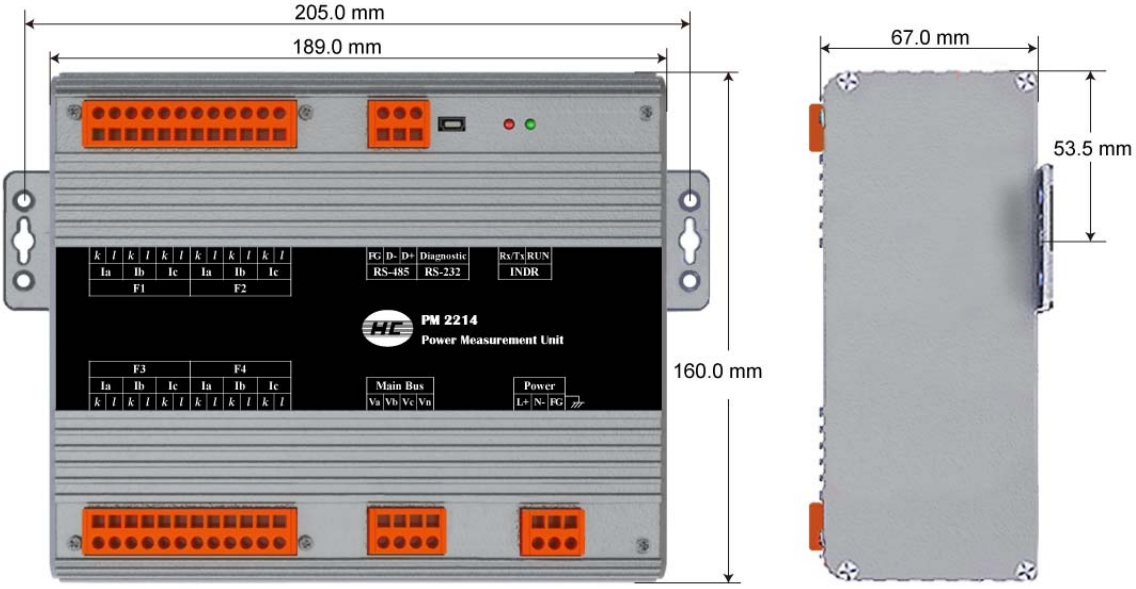
3 phase 4 wires 3U input



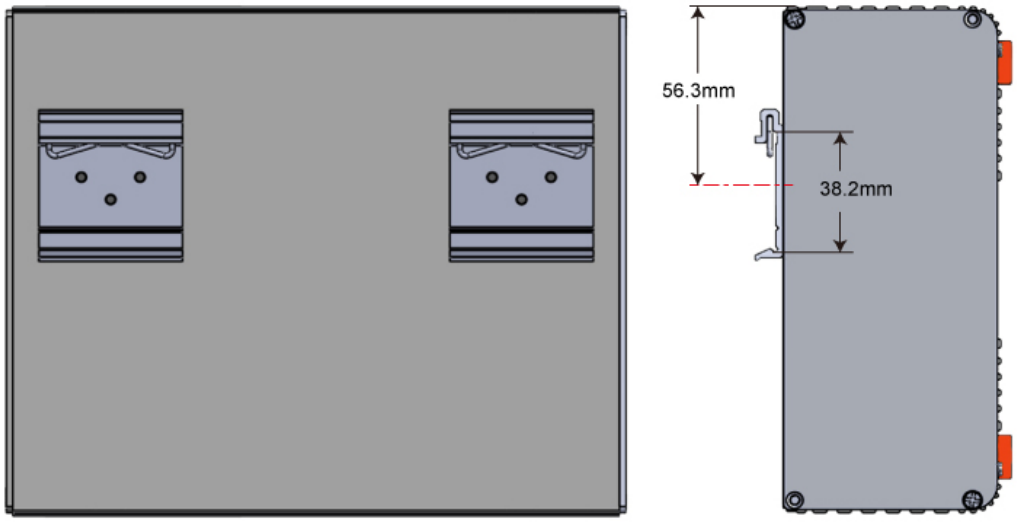
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7. Dimension/Mount





Din Rail Mount (with 35 mm)



8. Wight = 1100g ± 50g

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