



Quick Start Guide

PM130 PLUS Series Powermeters



Mechanical Installation

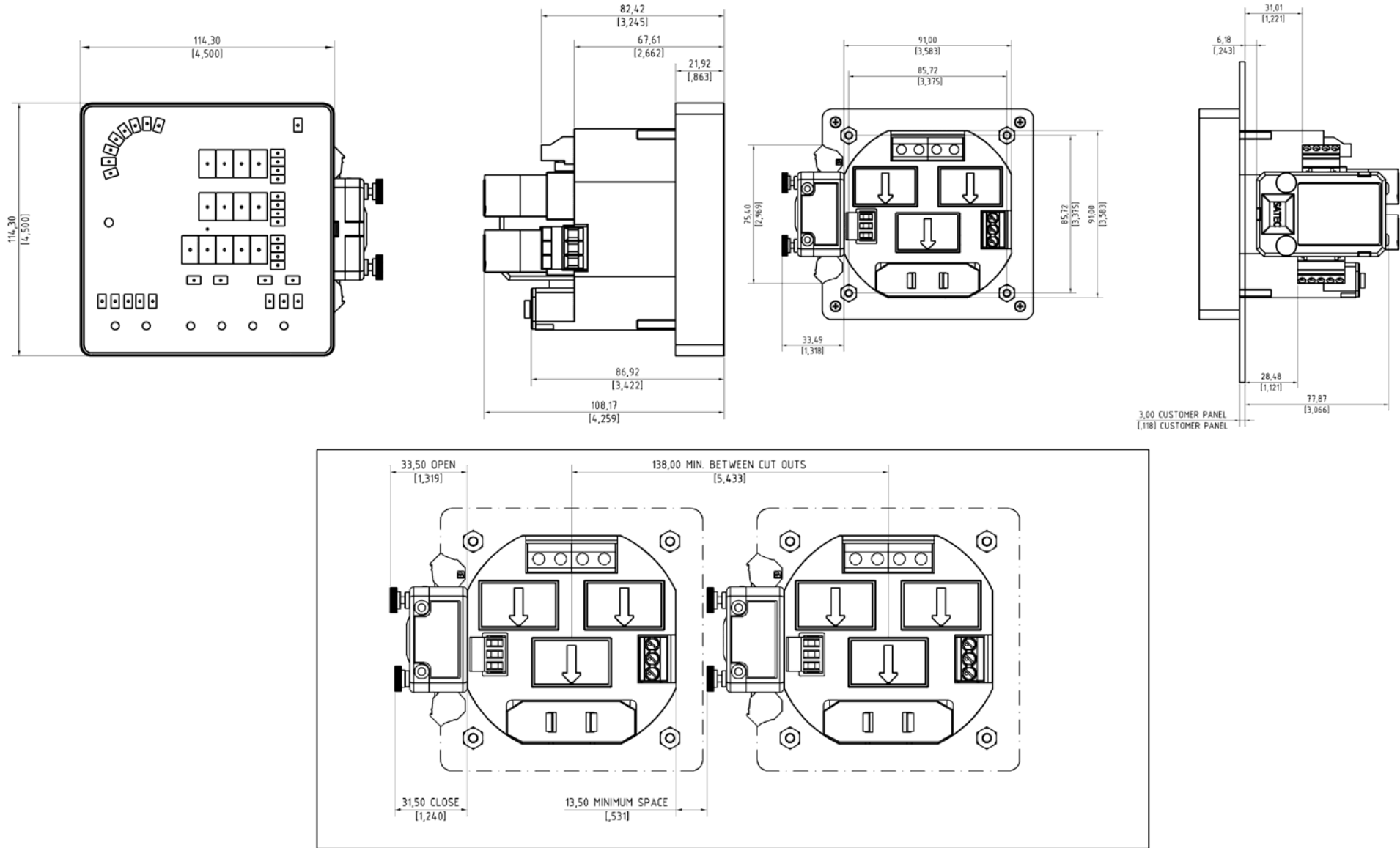


Figure 1: Instrument Dimensions

Typical Electrical Installation

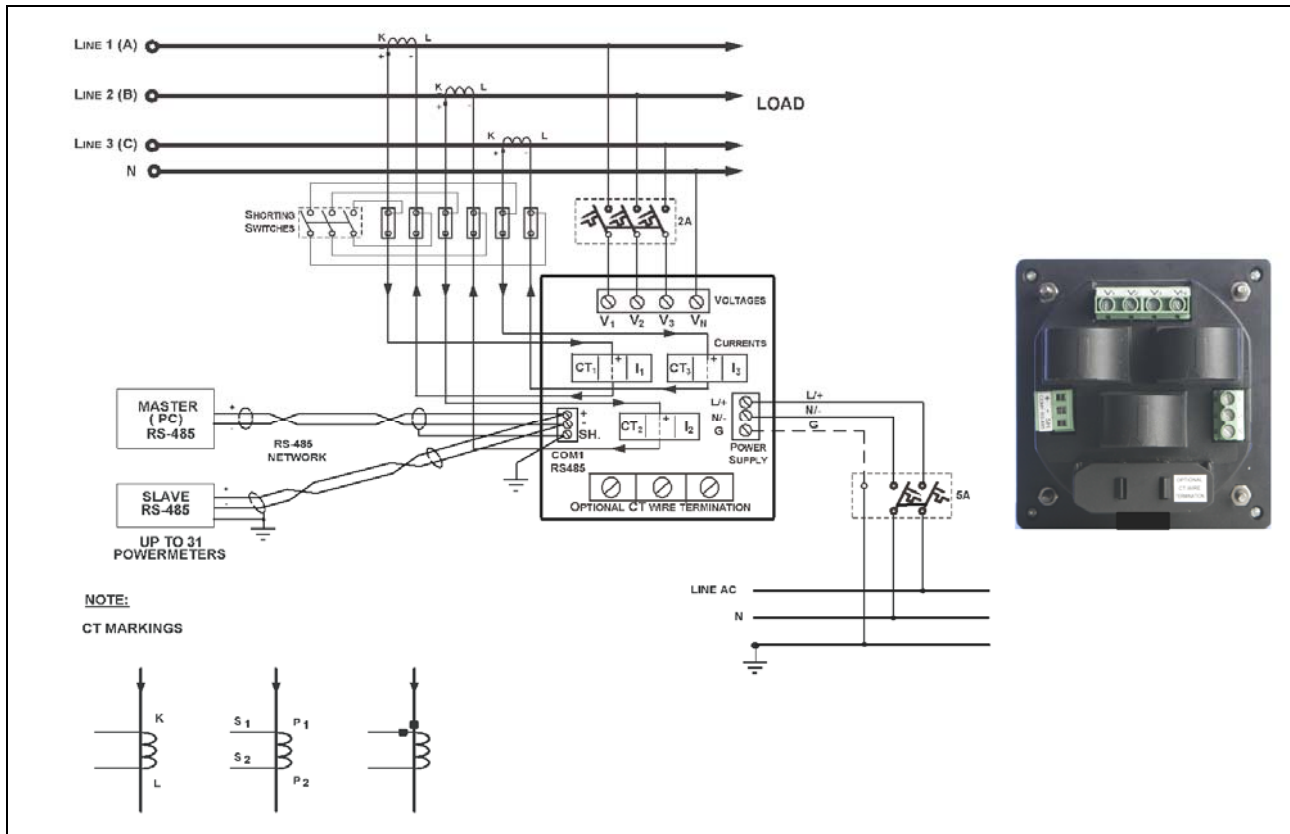


Figure 3: Common Wiring Mode: 4LL3 or 4L-n3

Wiring Configuration	Setup Code
3-wire 2-element Direct connection using 2 CTs	3dir2
4-wire Wye 3-element direct connection using 3 CTs	4Ln3 or 4LL3
4-wire Wye 3-element connection using 3 PTs, 3 CTs	4Ln3 or 4LL3
3-wire 2-element Open Delta connection using 2 PTs, 2 CTs	3OP2
4-wire Wye 2½ -element connection using 2 PTs, 3 CTs	3Ln3 or 3LL3
3-wire 2½ -element Open Delta connection using 2 PTs, 3 CTs	3OP3
4-wire 3-element Delta direct connection using 3 CTs	4Ln3 or 4LL3
3-wire 2½-element Broken Delta connection using 2 PTs, 3 CTs	3bLn3 or 3bLL3

NOTE:

Refer to the Installation and operation manual for the wiring schematics diagrams



NOTE:

Refer to the Installation and operation manual for the wiring schematics diagrams



Figure 6: Mounting module

CAUTION!

Before I/O Module installation ensure that all incoming power sources are shut OFF. Failure to observe this practice can result in serious or even fatal injury and damage to equipment.

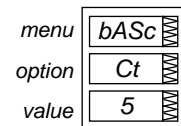
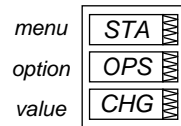
Basic Setup

All setups can be performed directly from the display panel or via communication ports using PAS communication software, except for **Communications** and **Display** setups, which must be performed directly at the instrument panel.



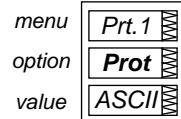
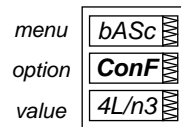
To set the CT Primary current, perform the following steps:

- Press **SELECT**
- Press **▲** + **SELECT**
- Press **SELECT** : "5" should blink.
- Use the **▲▼** arrows to scroll to the desired value (Press **▲▼** continuously for quick scrolling).
- Press **ENTER** to save the selected value.
- Press **ESC** (X3) to return to the display menu.



Performing Basic and Communications Setup

- Press **SELECT** → (X3) **CHG** → **ENTER**
- Press **▲▼** to scroll to desired menu.
- Press **ENTER** to activate middle window.
- Press **▲▼** to scroll to desired option.
- Press **SELECT** to activate lower window.
- Press **▲▼** to scroll to desired value.
- Press **ENTER** to save selected value.
- Press **ESC** (X3) to return to the display menu.






DATA DISPLAY

Navigating in Display Mode

The front panel has a simple interface that allows you to display numerous measurement parameters in up to 38 display pages. For easier reading, the parameters are divided into three groups, each accessible by a designated key. These are:


- **Common measurements** - no selection key
- **Min/Max measurements** - selected by the **MAX/MIN** key
- **Energy measurements** - selected by the **ENERGY** key

The up/down arrow keys are used as follows in Display Mode:

-  Scrolls through the pages downward (forward)
-  Scrolls through the pages upward (backward)
-  Returns to the first page within current measurement group

For each display page, up to three parameters can be displayed. The **Load** bar graph displays the percentage of the highest of 3 phases current measured by the PM130 PLUS.


Selecting a Display Page

- Press the  to scroll through display pages.


Selecting Common Measurements

- Press the key pointed to by the illuminated round LED below the front panel display. If no LED is lit up, the front panel is currently displaying the common measurements parameters.

Selecting Min/Max Measurements

- Press the **MAX/MIN** key. Use the  to scroll through Min/Max and Max. demand measurements.

Selecting Energy Measurements

- Press the **ENERGY** key. Use the  to scroll through the different energy readings.

Basic Menu

Code	Parameter	Options	Description
Conf	Wiring mode	3OP2	3-wire open delta using 2 CTs
		4Ln3	4-wire Wye using 3 PTs (default)
		3dir2	3-wire direct connection using 2 CTs
		4LL3	4-wire Wye using 3 PTs
		3OP3	3-wire open delta using 3 CTs
		3Ln3	4-wire Wye using 2 PTs
		3LL3	4-wire Wye using 2 PTs
		3bLn3	3-wire Broken delta using 2 PTs, 3 CTs
		3bLL3	3-wire Broken delta using 2 PTs, 3 CTs
		Pt	PT ratio
Ct	CT primary current	1-50,000A (5*)	The primary rating of the current transformer
d.P PM130E PLUS, PM130EH PLUS	Power demand period	1, 2, 5, 10, 15*, 20, 30, 60, E	The length of the period for power demand calculations, in minutes . E = external synchronization
n.dp PM130E PLUS PM130EH PLUS	Number of power demand periods	1-15 (1*)	The number of demand periods to be averaged for sliding window demands 1 = block interval demand calculation
A.dp	Ampere/Volt demand period	0-1800 (900*)	The length of the period for volt/ampere demand calculations, in seconds . 0 = measuring peak current
Freq	Nominal frequency	25, 50, 60, 400 (Hz)	The nominal power utility frequency

- - Default setup

Communication Port Menu

COM1 setting

Code	Parameter	Options	Description
Prot	Communications protocol	ASCII*, rtu, dnP3	ASCII, Modbus RTU (default) or DNP3.0 protocol
rS	Interface standard	485	RS-485 interface (default)
Addr	Address	ASCII: 0 (default) - 99, Modbus: 1 (default) -247, DNP3.0: 0 (default) -255	
bAud	Baud rate	110, 300, 600, 1200, 2400, 4800, 9600 (default), up to 115,200 bps	
dAtA	Data format	7E, 8E (7/8 bits, even parity), 8n (default) (8 bits, no parity)	

COM2 setting (optional communication module)

Code	Parameter	Options	Description
Prot	Communications protocol	rtu, dnP3, PrFB	Modbus/TCP or DNP3/TCP or Profibus DP protocol
rS	Interface standard	Eth., PrFB	Ethernet interface (default) or Profibus DP
Addr	Address	Modbus: 1 (default) -247, DNP3.0: 0-65532, Profibus DP: 0-126	

Input and Output Ratings

3 voltage inputs	<i>690 V: (standard)</i>		DIRECT INPUT - Nominal: 690V line-to-line voltage, 790V maximum; 400V line-to-neutral, 460V maximum - Burden: <0.5 VA. INPUT USING PT - Burden: <0.15 VA
	<i>120 V: (optional)</i>		INPUT USING PT - Nominal: 120V line-to-line voltage, 144V maximum - Burden: <0.1 VA
	<i>Voltage input terminals</i>		Maximum wire section: 4 mm ² (10 AWG)
3 current inputs (Galvanically isolated)	<i>5A: (standard)</i>		INPUT VIA CT with 5A secondary output - Burden: 2.5 to 4 mm ² (13-11 AWG) wire from CT Overload withstand: 15A RMS continuous, 300A RMS for 1 second.
	<i>1A: (optional)</i>		INPUT VIA CT with 1A secondary output - Burden: 2.5 to 4 mm ² (13-11 AWG) wire from CT Overload withstand: 3A RMS continuous, 80A RMS for 1 second.
Communication port COM1	<i>EIA RS-485 standard</i>		Optically isolated, max. speed 115.2Kb/s
	<i>COM1 terminals</i>		3 x Maximum wire section: 2.5 mm ² (12 AWG)
Power Supply (Galvanically isolated)	<i>120/230 V AC/DC (standard)</i>		85-265VAC, 88-290VDC; 50/60/400 Hz 9VA
	<i>12 VDC (optional)</i>		9.5-18VDC
	<i>24/48 VDC (optional)</i>		18.5-72VDC
	<i>Power Supply input terminals</i>		3 x Maximum wire section: 2.5 to 4 mm ² (13-11 AWG)
MODULE 4DI/2DO (Optional)	<i>DIGITAL INPUTS x 4 optically isolated inputs</i>		Dry contact, internally wetted @ 24VDC
	<i>DIGITAL OUTPUTS</i>	<i>RELAY x 2</i>	5A/250 VAC; 5A/30 VDC, 1 contact (SPST Form A)
		<i>SSR x 2</i>	0.15A/250 VAC - 400 VDC, 1 contact (SPST Form A)
	<i>4DI/2DO terminals</i>		9 x Maximum wire section: 2.5 mm ² (12 AWG)
MODULE 4 AO (Optional)	<i>ANALOG OUT x 4 optically isolated outputs (4 different options)</i>		±1 mA, maximum load 5 k Ω (100% overload)
			0-20 mA, maximum load 510 Ω
			4-20 mA, maximum load 510 Ω
			0-1 mA, maximum load 5 k Ω (100% overload)
	<i>4 AO terminals</i>		5 x Maximum wire section: 2.5 mm ² (12 AWG)
Communication port COM2 (Optional)	<i>Ethernet</i>		10/100 Base T, auto adaptation speed, Max. speed 100Mb/s
	<i>ETH connector</i>		Shielded RJ45 cable
Communication port COM2 (Optional)	<i>Profibus</i>		Max. speed 12 Mb/s
	<i>Profibus terminals</i>		5 x Maximum wire section: 2.5 mm ² (12 AWG) or using terminal to DB9 converter: P/N AC0153 REV.A2