



# Solar Analytics Billing Hardware Complete Installation Guide

## Single Phase NMI Billing Bundle

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## Table of Contents

1	Before you begin .....	3
2	Introduction .....	4
3	Compliance Information .....	4
4	Safety caution.....	5
5	Single Phase hardware bundle.....	5
5.1	Billing for Net Consumption Data .....	6
6	Hardware Installation.....	6
6.1	Positioning of the PMC220 Meter for correct measurement .....	6
6.2	PMC-220 power connections .....	7
6.3	PMC220 Display and controls.....	7
6.4	PMC 220 Configuration .....	8
6.4.1	Connection.....	8
6.4.2	Starting PMC set-up .....	9
6.4.3	Face Plate Configuration .....	12
6.5	MB63 Installation .....	13
6.6	Final commissioning.....	14
7	Billing Data.....	15
7.1	Daily data download.....	15
7.2	Connecting to the Solar Analytics API.....	15
7.3	External Billing Service.....	15
8	Appendix 1 MB63 Data sheet.....	16
9	Appendix 2 PMC220 Data sheet .....	18
10	Appendix 3 PMC 220 Certificates .....	20
11	Appendix 4 Single Phase Wiring Diagram Gross .....	22
12	Appendix 5 Single Phase Wiring Diagram Net .....	23

# 1 Before you begin

**It is vital that you read this manual before specifying or installing this hardware bundle.**

Please take particular note of the following:

- **Required software** – You will need the PMC Set-Up software downloaded and installed on a web connected laptop (not IOS or Android) before attempting to correctly install and configure this hardware bundle. **Download the software [here](#).**
- **Required Dashboard** – You will need a Solar Analytics Fleet Dashboard login to configure and commission this hardware bundle.
- **Required Serial to USB converter** – You will need a serial to USB converter to commission the CET meter on site and utilise the PMC Set-Up software. **[This device](#)** from Jaycar has been tested as suitable.
- **Site definitions** – Please note that if you are installing NMI Hardware Billing Bundles *and* standard KR63 devices on the same site, you may need to register the devices as separate sites. Please refer to your supplier or Solar Analytics sales team for advice.
- **MB63 familiarity** – You need to be familiar with the installation, testing and commissioning procedures applicable to standard MB and KR hardware from Solar Analytics before attempting this installation.
- **Assure isolation** – For testing purposes, you will need to ensure there is a way to isolate the voltage inputs. An existing or new circuit breaker (not supplied) can be used depending on the regulations in your jurisdiction.
- **Installation order process** – The order in which components are installed and commissioned is critical for successful installation. Please ensure the process in this manual is strictly adhered to.

## 2 Introduction

The Solar Analytics NMI Billing solution has been designed specifically for applications where NMI approved billing data is required such as Power Purchase Agreements (PPAs), EV charger disaggregation, embedded networks and microgrids.

This manual applies to the Single Phase NMI Billing Bundle SKU MB-63-60-3-63-1P

### Support and Contact Information

All contents of this document are made available online at

<https://www.solaranalytics.com/au/support/>

If you have any technical questions or feedback, please do get in touch. Our support phone line is open Monday to Friday 9:00 AM to 5:00 PM AEST (excluding public holidays) on 1300 651 137 or [support@solaranalytics.com.au](mailto:support@solaranalytics.com.au).

To help with the support request, the following information is necessary to provide you with the assistance needed:

- Solar Smart Monitor Serial number e.g. D704206001234
- Product Type/Code e.g. MB-63-60-3-63-1P
- Site Installation Address (if available)

## 3 Compliance Information

Please note that the rules and regulations for metering of energy in various applications in Australia are covered by numerous State and Federal regulatory bodies. These rules and regulations change from time to time and it is the responsibility of the purchaser and installer to ensure that they are fully aware of their legal and statutory obligations for the given application.

Specifically, purchasers and installers should be aware that the rules and regulations apply not only to the type of hardware used but also potentially the application, system size, annual energy consumption, who installs and or maintains the hardware and who manages the data. Significant penalties may apply for breaches of National Electricity Rules.

Solar Analytics billing solutions provide a compliant hardware solution. However, you are specifically advised that it is your responsibility to ensure that the applications and methods used for the collection and or use of billing data are compliant with the relevant rules and regulations.

Our compliance and approval specifications are referenced in the appendices.

## 4 Safety caution

### **CAUTION**

**The installation of the Solar Analytics billing hardware bundle should only be performed by qualified, competent personnel that have the appropriate training and experience with high voltage and current devices. The metering must be installed in accordance with all local and national codes. During the operation of the meter, hazardous voltages are present at the input terminals.**

**FAILURE TO OBSERVE SAFETY PRECAUTIONS CAN RESULT IN SERIOUS OR EVEN FATAL INJURIES AND EQUIPMENT DAMAGE.**

## 5 Single Phase hardware bundle

The single-phase MB-63 (Direct Connect) bundle includes the following components:

- 1 x Solar Analytics Modbus-enabled 6 channel Solar Smart Monitor MB-63
- 1 x Set of 3 x 60A CTs
- 1 x 'CET' single phase PMC-220-C35AE meter
- 1 x Modbus connection cable

Optional CTs for connection with the Solar Smart Monitor MB-63 are available separately in the following sizes:

- 60A
- 120A
- 200A
- 400A
- 600A

The PMC-220-C35AE is a Direct Connect meter capable of measuring and reporting currents up to 63A

The Solar Smart Monitor MB-63 will have additional functionality of switching two independent circuits when paired with Solar Analytics external contactors (coming soon).

Reporting intervals for the CET meter billing data is daily. Standard reporting intervals (up to 5 seconds) apply for the Solar Analytics Smart Monitor. Refer to Section 7 Billing Data for information on data intervals.

SA Billing Bundle	DIN Rail Width Requirements
MB-63-60-3-63-1P	72mm = 36mm + 36mm
MB-63-120-3-100-3P	162mm = 36mm + 126mm
MB-63-600-3-600-3P	162mm = 36mm + 126mm
Additional contactors	17.5mm per 1 phase contactor 25mm per 3 phase contactor

The following guide can be used to help with selecting and ordering the correct bundled option for the Solar Analytics billing solution.

Product Code		Description			
<b>MB-63 Solar Analytics Modbus Smart Monitor</b>					
<b>CT Rating</b>					
60	Rated current for 60 CTs provided in bundle				
<b>Number of CTs</b>					
3	3 x CTs provided in bundle				
<b>CET Meter Rating</b>					
63	63A rating for Pattern Approved CET Meter				
<b>CET Meter Channels</b>					
1P	1 Channel pass through current CET Meter				
MB-63	60	3	63	1P	MB-63-60-3-63-1P

## 5.1 Billing for Net Consumption Data

Each CET meter is only capable of a single data feed through a single Solar Smart Monitor (it is not possible to daisy-chain them). With that, to bill for Net Consumption data i.e. solar self-consumption you will require two bundles to measure the Grid Consumption and Solar PV Production separately. The net billing calculations have to be performed manually after obtaining the Billing Data.

## 6 Hardware Installation

### 6.1 Positioning of the PMC220 Meter for correct measurement

Determine a location for the installation of the hardware bundle such that the MB64 and PMC220 are installed directly adjacent to each other and alongside suitably rated circuit protection.

The selected position for installing the PMC Meter depends on what loads are required for the billing measurement. For billing Solar Production, the CET meter should be installed just upstream of the Solar Supply Main Switch to capture the full AC output of the solar PV system.

To measure import/export from the grid, it is advised to install the PMC meter upstream of the Main Switch i.e. in between the Mains Meter and Main Switch.

After fitting the hardware in a suitable location, terminate the power supply such that power is supplied from: Supply to Circuit protection to PMC220 to MB63.

NOTE: In some cases, fitment will require replacement of older service fuses. You should ensure that you are fully aware of and compliant with all State based rules and regulations relating to the installation of metering equipment and service fuses before proceeding.

## 6.2 PMC-220 power connections

Please consult the serial number label to ensure that the voltage and current input is less than or equal to the CET Meter's input specification.

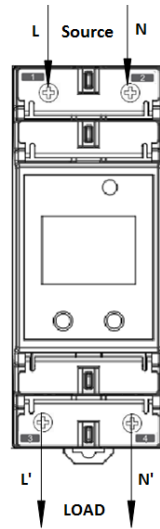


Figure 1 Voltage Wiring for PMC-220

### Power connections

The active circuits and neutral must be wired to the terminals on the PMC-220 in the following configurations:

CET Meter terminal configuration	
Active (Line)	Terminal 1
Neutral (Line)	Terminal 2
Active (Load)	Terminal 3
Neutral (Load)	Terminal 4

## 6.3 PMC220 Display and controls

The meter's front panel is used for both display and configuration purposes. The LCD display screen and two buttons allow quick access to view measurements and meter information, configure the parameters and perform maintenance.

The PMC-220 front panel and display can be used as directed in the [PMC-220 User Manual](#), so long as the Modbus communications parameters are not changed.

The COMM LED flashes when the Modbus is active. The PMC-220 is shipped with the front panel password set to the default 000.



Figure 2 Front Panel for PMC-220

## 6.4 PMC 220 Configuration

### 6.4.1 Connection

Utilise the Set-Up software to correctly configure the PMC 220. Using this application will enable real time verification of the installation whilst on site.

Connect the PMC 220 to your laptop using the serial to USB converter.





## 6.4.2 Starting PMC set-up

**NOTE: The PMC-220 Modbus settings are preconfigured and must not be changed.**

The PMC220 should be powered up prior to running the set-up.

To run the PMC Setup program, double-click the PMCSetup icon or

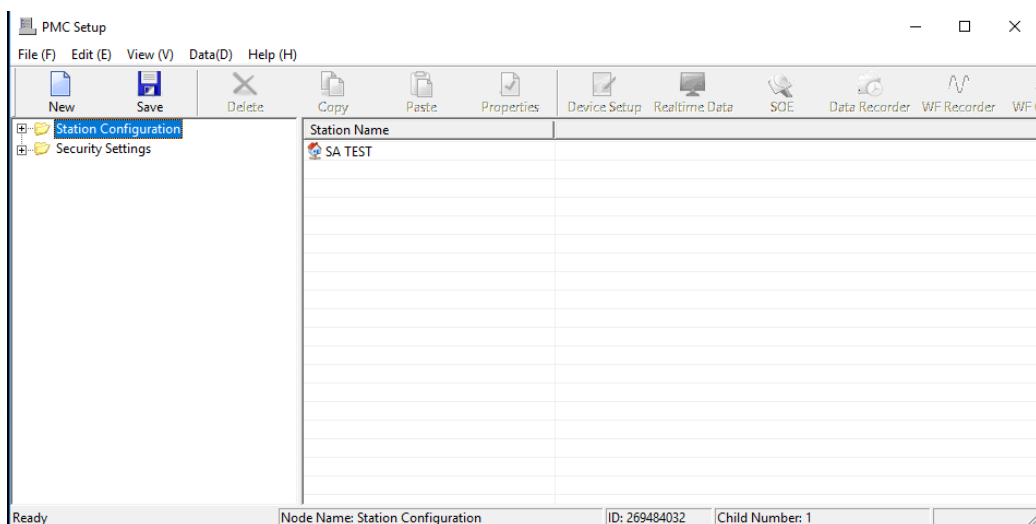
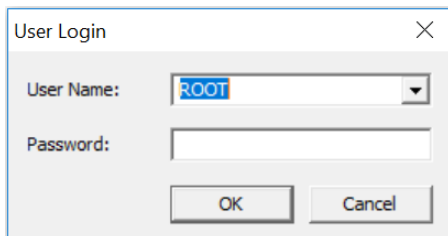
For Windows XP, click Start => Programs => PMC Setup => PMCSetup or

For Windows VISTA or Windows 7, click => All Programs => PMC Setup => PMCSetup.

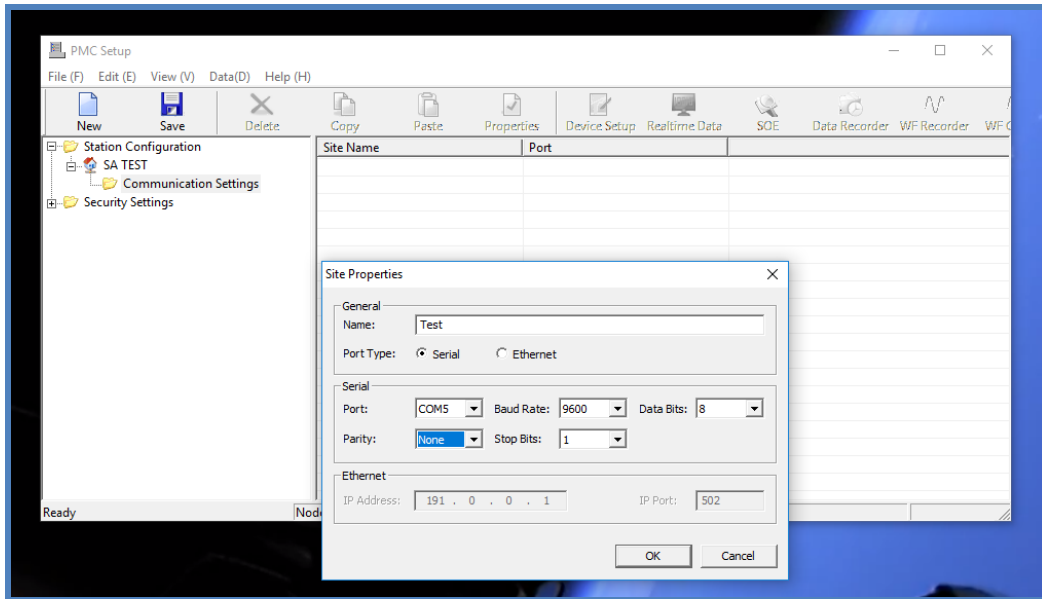
The following User Login dialog box appears.

Username – ROOT

Password – “Leave Blank”

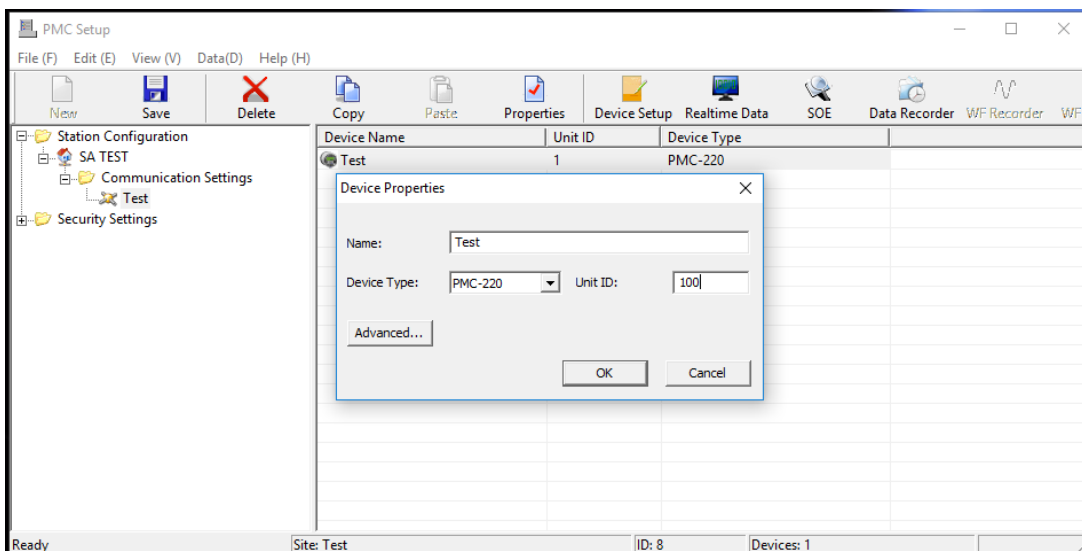


To insert a new Site, select Communications Settings under Station Configuration on the left-hand pane and then click on the 'New' Icon on the Tool Bar and the Site Properties dialog box will appear. Alternatively, you can right-click on Communications Settings and then select New from the pop-up dialog box.



Confirm 'Port Type' is Serial, Change 'Parity' to Even, Click OK.

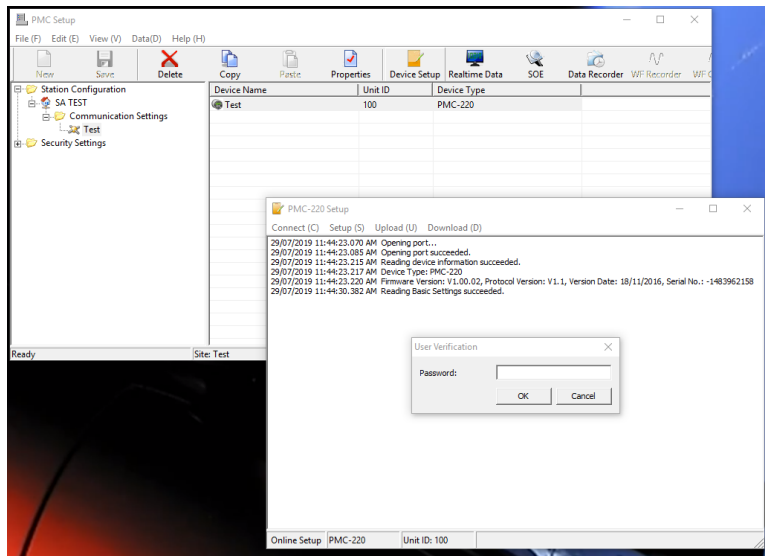
Select the Site under which you want to insert a Device on the left-hand pane then click on the New icon on the Tool Bar or move your mouse cursor over the Site Name column, right-click on it and then select New to bring up the Device Properties dialog box.



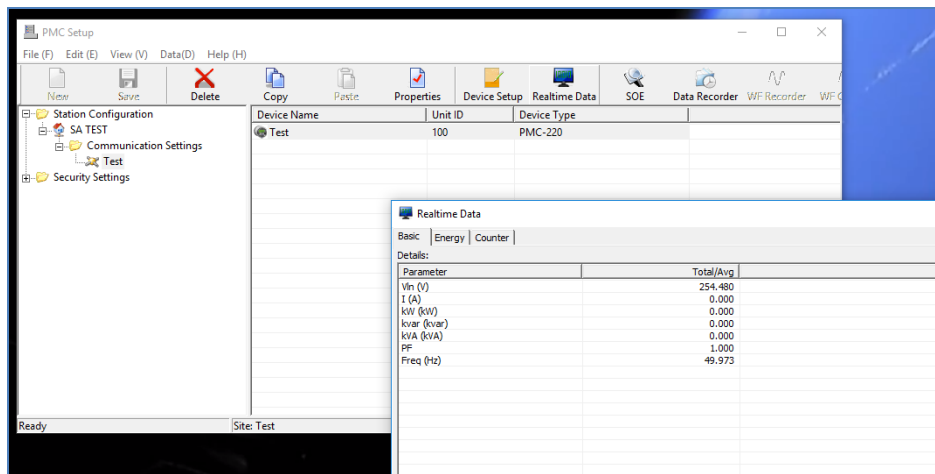
Configure the Device Properties according to your actual situation. The following is a description of the configurable parameters in the Device Properties dialog box. After configuration, click OK to save or Cancel to exit without saving your changes.

- Name – Not required
- Device Type – PMC-220, PMC-340A or PMC-340B
- Unit ID – Default is '100'
- Click OK
- Click on your Device
- Click on the Device Setup icon to access Device Configuration. In this case, the PMC-220 Setup dialog box appears.

Leave the Password blank and click OK



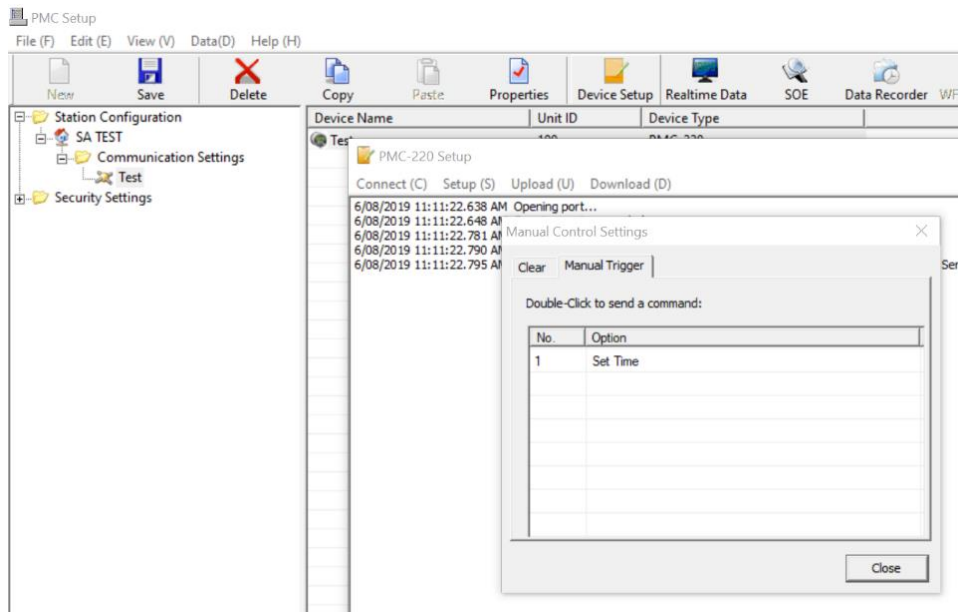
After PMC Setup has been properly configured, it is now ready to communicate with the PMC-220 power meter. To view the real-time data, click on the Realtime Data icon on the Tool Bar and the Realtime Data dialog box appears that shows 3 tabs: Basic, Energy & Counter.



This enables you to verify correct installation whilst on site.

The final step is to Set time.

Click on the device, then click Device Setup. The PMC-220 Setup dialog box appears. Click on Connect the Connect again. The connection will then be tested and results displayed. Click on Setup (s), then choose Manual Control Settings. Leave password 'blank', Click OK. Select Manual Trigger tab, Double-Click on Set Time & acknowledge, OK



### 6.4.3 Face Plate Configuration

In the event that Set-Up software is unavailable or non-functional, the face plate can be used as an emergency configuration method noting that it has limited capabilities compared to the software set up. Date & Time set up

Press <⏏> for two seconds to enter Setup Configuration, and the LCD displays PROGRAM.

Press <▼> to advance to the Password page.

A correct password must be entered before changes are allowed. The factory default password is 0000 (zero). Press the <⏏> button to select the parameter for modification. Use <▼> and <⏏> to enter the correct password.

Use <▼> to scroll to the desired sub-menu or setup parameter.

Press <⏏> to enter a sub-menu or select a setup parameter for modification.

Once a parameter has been selected, its value will blink.

Use <⏏> and <▼> to make modification to the selected parameter.

Press <⏏> for two seconds to return to the main menu

Press <⏏> for two seconds again to exit the Setup Configuration mode.

Note , the Setup Configuration will be automatically exited if there is a period of inactivity of 3 minutes or longer

Once confirmed, you can disconnect the device from your laptop and progress to the installation (commissioning of the MB-63).

**The PMC220 should be powered down before proceeding to MB64 set up.**

## 6.5 MB63 Installation

The Solar Smart Monitor provided as part of the billing solution is practically identical to the standard Solar Analytics Smart Monitor with the exception of the additional Modbus and Load Control port.

All installation steps and procedures are identical for the installation of this version of the Solar Smart Monitor. Please refer to the Solar Smart Monitor – Complete Installation Guide for full details.

The PMC-340 provides one standard RS-485 port that supports the Modbus RTU Protocol. The overall length of the RS-485 cable connecting the devices should not exceed 1200m.

Install the Modbus cable between the PMC-340 and the MB63. A two-core, double insulated cable is supplied, to be cut to the required length.

- One end of the cable is stripped and connects to screw terminals on the PMC-340. These connections must be torqued to 0.45 Nm.
- The other end is terminated in a three pin Terminal Block connector at the Solar Smart Monitor.

The table below provides a guide for each corresponding terminal.

Device	PMC-340	MB-63
Common	Terminal 7	Terminal A
Signal	Terminal 8	Terminal B

Connect the Solar Smart Monitor CTs so that they duplicate the CET Meter allowing data to be displayed on the Dashboard. The Solar Smart Monitor CTs are required to feed highly granular data to the Solar Analytics dashboard.

Additional CT channels on the MB63 can be used to monitor and display other AC loads or sub circuit data on the Dashboard.

Ensure that the voltage reference for the MB63 is supplied from the PMC220.

Here are a few quick notes as a general guideline for installing the Solar Smart Monitor

### Voltage Connections

- 1 Phase or 3 Phase wiring tails are provided for ease of installation
- Connect P1, P2, P3 and N to the appropriate phases being measured
  - o i.e. P1 = Phase A

## Current Transformer Connections

- Only Solar Analytics supplied CTs are supported by the Solar Smart Monitor
- Directional arrows for CT placement are printed on the CTs
- 3 x CTs are provided as standard with the bundle
  - o An additional 3 x CTs can be purchase through Solar Analytics
- CT Connections are labelled ≡, 6+, 5+, 4+, ≡, 3+, 2+, 1+ The white wires connect to terminals labelled “≡”.
- The pink wires connect to the terminals labelled “+”
- The CTs and voltage phases must match as stated below
- 

Place the CT connected to:	On cables connected to:
1+ and 4+	Phase 1
2+ and 5+	Phase 2
3+ and 6+	Phase 3

## 6.6 Final commissioning

Once the preceding PMC220 commissioning procedure has been completed, all CT's are fitted and the voltage reference is connected to the MB63, final commissioning can take place.

Power up both devices and follow the standard Solar Analytics commissioning procedure to register and commission the MB64.

The first 3 steps in the registration process for the sites on the Solar Analytics dashboard all remain the same.

1. Log in to [my.solaranalytics.com.au](http://my.solaranalytics.com.au)
2. Click “Add New Site” at the bottom of the page
3. Fill in the following details stepped pages:
  - (i) Customer Details (Name, Email Address etc)
  - (ii) Site Details (Site Name, Location etc)
  - (iii) Solar PV System Details (Panel and Inverter Model and Manufacturer)

### What's different

Ensure the Solar Smart Monitor is powered on and communicating before attempting this step.

In step 4, the “Monitoring Hardware” page, enter the serial number of the device to attach it to the site. An option for 7 channels will appear for channel assignment. Through here, select “Billing Data” for channel 7 which corresponds to the data from the CET Meter.

Installation is now complete.

## 7 Billing Data

There are several methods available to access the billing data from the CET Meter. The data obtained through the CET Meter will be a cumulative value of the measured billing load/s.

Note that in a Gross configuration (ie one hardware bundle) the data will represent either Gross Generation or Gross Consumption depending on what is being measured. In a NET configuration, the PV data will represent Gross Generation and the Consumption data will represent Net Consumption (ie load net of generation).

**NOTE: PMC220 meter data is supplied as cumulative daily data only.**

### 7.1 Daily data download

The CET Meter billing data is available via the Data Download page in a CSV format.

### 7.2 Connecting to the Solar Analytics API

You can connect directly to the Solar Analytics API with the right credentials and knowledge of accessing data through a REST API. The response format will be in JSON.

### 7.3 External Billing Service

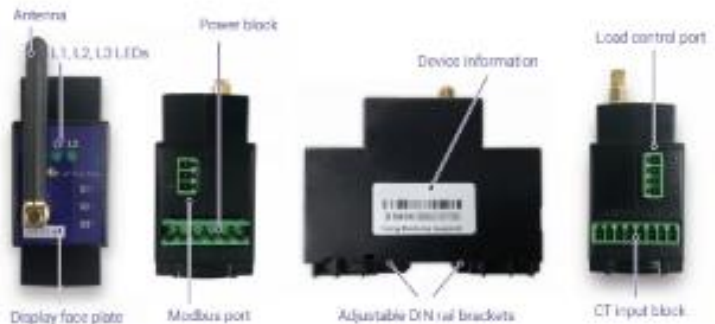
You can connect us to your external billing service if you wish to direct the data feed from the Solar Analytics API directly to them. If you require, we can provide recommendations on our preferred external billing service providers.

## 8 Appendix 1 MB63 Data sheet

Solar Smart Monitor  
with Modbus  
MB-63



solar analytics



### Features

- ✓ Solar PPA compliant billing solution
- ✓ Pattern approved data stream for billing
- ✓ Single phase & three phase compatible in field
- ✓ Direct current and CT options available
- ✓ Expandable and flexible CT sizing on Solar Smart Monitor
- ✓ Simple two wire Modbus communication between devices
- ✓ 4G communications to the cloud
- ✓ Compact and rapid DIN Rail mounting
- ✓ Load Control outputs

### Typical Configuration

#### Single Phase Pass Through Bundle



Suitable for up to 60A single phase applications. Solar Smart Monitor supplied with 3 x 60A CTs (expandable to 6 CTs). CET meter supplied in direct current configuration.

#### Three Phase Pass Through Bundle



Suitable for up to 100A three phase applications. Solar Smart Monitor supplied with 3 x 120A CTs (expandable to 6 CTs). CET meter supplied in direct current configuration.

#### Three Phase CT Bundle



Suitable for up to 600A three phase applications. Solar Smart Monitor supplied with 3 x 600A CTs (expandable to 6 CTs). CET meter supplied with 3 x 600A CTs.

Please note that wiring diagrams can be found on the installation manual on our online Support Centre.



## Application Information

### Introduction

The Solar Analytics billing solution has been designed specifically for applications where pattern approved billing data is required such as Power Purchase Agreements (PPAs), EV charger disaggregation, embedded networks and microgrids.

There are 3 hardware bundles offered as part of the Solar Analytics billing solution. All bundles come with:

- Solar Analytics Smart Monitor with Modbus (MB-63)
- Optional switching circuits
- Modbus cable
- Wiring tail for voltage reference frame (single or three phase)
- Quick Set Up Guide
- 3 x current transformers for Solar Smart Monitor
- 3 x current transformers for CET meter (CT bundle only)
- 1 x CET Pattern Approved Meter (size may vary)
- Option to purchase 3 additional CTs & contactors

### Compliance

The Solar Smart Monitor meets all relevant compliance and safety requirements for non Pattern Approved hardware in Australia. The CET Meters meet all relevant compliance and safety requirements for Pattern Approved hardware in Australia including NMI M-6 Revenue Metering Approval.

Refer to our detailed manuals for full hardware compliance information. Please note that you may need to undertake specific additional activities to ensure you are using our data in a compliant manner for your application.

### Data Streams

Data from up to six channels via Solar Smart Monitor is used for Dashboard displays and performance monitoring.

Data from CET Meter is used for billing purposes only and is available via CSV and API.

### Other Information

For Gross solar billing applications one bundle is required. For Net billing applications two bundles are required.

Solar Smart Monitor & CET meters are supplied pre-configured for Modbus communications.

Please note that where additional or different sized CTs are used on Solar Smart Monitor, remote recalibration may be required.

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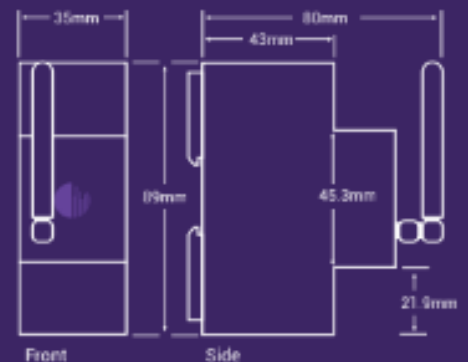
1300 651 137

[www.solaranalytics.com](http://www.solaranalytics.com)

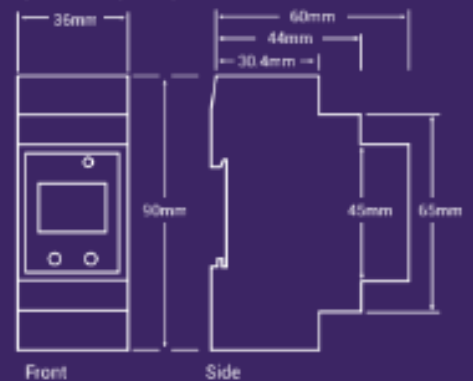
[sales@solaranalytics.com](mailto:sales@solaranalytics.com)

## Dimensions

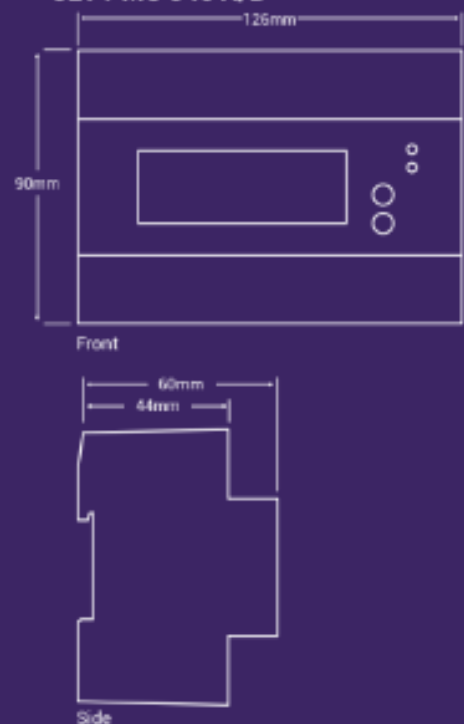
### Solar Smart Monitor



### CET PMC 220



### CET PMC 340 A/B



## 9 Appendix 2 PMC220 Data sheet



### PMC-220

### Single-Phase Multifunction Meter



#### Overview

The PMC-220 Single-Phase Multifunction Meter is CET's latest offer for the low voltage energy metering market featuring DIN rail mount, compact construction, 63A direct current input and high accuracy measurements. The PMC-220 complies with the IEC 62053-21 Class 1 kWh Accuracy Standard. With the standard RS485 port and Modbus RTU protocol, the PMC-220 becomes a vital component of an intelligent, multifunction monitoring solution for any Energy Management Systems.

#### Features

- IEC 62053-21 Class 1
- Direct input up to 63A without external CT
- Low starting current @ 20mA
- Multifunction measurements
  - Voltage, Current, kW, kvar, kVA, PF and Frequency
  - kWh and kvarh Imp/Exp/Tot/Net and kVAh
- 6% digit Multifunction LCD Display
- Self-powered, no external control power required
- kWh LED Pulse Output
- Solid State Energy Pulse Output @ 1000 imp/kWh
- Standard RS-485 port with Modbus RTU support
- Easy installation with DIN rail mounting, no tools required

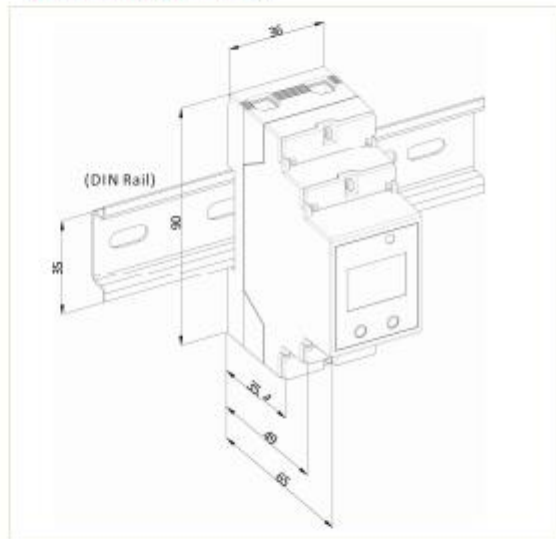
#### Front Panel Display



#### Accuracy

Parameters	Accuracy	Resolution
Voltage	±0.5% reading	0.1V
Current	±0.5% reading	0.001A
kW, kVA	IEC 62053-21 Class 1	0.001kX
kvar	IEC 62053-23 Class 2	0.001kvar
kWh	IEC 62053-21 Class 1	0.01kWh
kvarh	IEC 62053-23 Class 2	0.01kvarh
P.F	±1.0%	0.001
Frequency	±0.02Hz	0.01Hz

#### Dimensions and Installation



#### Terminals and Wiring Diagram





## PMC-220

# Single-Phase Multifunction Meter

### Technical Specifications

Inputs (L, N)	
Voltage (Un)	240VAC
Range	0.4 to 1.1 Un
Current (Ib / Imax)	5A / 63A
Starting Current	0.4% Ib (0.02A)
Minimum Current	5% Ib (0.25A)
Frequency	45Hz-65Hz
Power Supply	Self-powered from 0.4 to 1.1 Un
Maximum Wire Size	2.5 mm <sup>2</sup> (4AWG)
Torque for Current Inputs	2.5 N.m
Communications	
RS-485	Modbus RTU
Maximum Wire Size	1.5mm <sup>2</sup> (16AWG)
Torque for RS485 Terminals	0.45 N.m
Environmental Conditions	
Operating Temp.	-25°C to +70°C
Storage Temp.	-40°C to +85°C
Humidity	5% to 95% non-condensing
Atmospheric pressure	70kPa to 106kPa
Mechanical Characteristics	
Unit Dimensions	36x65x90mm
Shipping Weight	0.18kg
Shipping Dimensions	120x103x42mm
Mounting	DIN-Rail Mounting

### Standards of Compliance

Safety Requirements		
Insulation	IEC 60255-5-2000	
Dielectric test	2kV @ 1 minute	
Insulation resistance	>100MΩ	
Impulse voltage	10kV, 1.2/50µs	
Electromagnetic Compatibility EMC 2004/108/EC (EN 61326: 2006)		
Immunity Tests		
Electrostatic discharge	IEC 61000-4-2:2001 Level IV	
Radiated fields	IEC 61000-4-3:2002 (10 V/m)	
Fast transients	IEC 61000-4-4:2004 Level IV	
Surges	IEC 61000-4-5:2005 Level IV	
Conducted disturbances	IEC 61000-4-6:2006 Level III	
Magnetic Fields	IEC 61000-4-8:2009 Level IV	
Oscillatory waves	IEC 61000-4-12:2006 Level III	
Radio Disturb	CISPR 22: 2006 Class B	
Mechanical Tests		
Vibration Test	Response	IEC 60255-21-1 Level I
	Endurance	IEC 60255-21-1 Level I
Shock Test	Response	IEC 60255-21-2 Level I
	Endurance	IEC 60255-21-2 Level I
Bump Test		IEC 60255-21-2 Level I

### Ordering Information

Ceiec Electric Technology	
Version 20150714	
Product Code	Description
PMC-220 Digital Single-Phase Energy Meter	
C	Input Current
3	Input Voltage
S	System Frequency
A	Communications
E	Language
PMC-220 - C 3 S A E	PMC-220-C3SAE [Standard Model]

### Modbus Map

Register	Property	Description	Format	Scale/Unit
0000	RO	V	Float	V
0002	RO	I	Float	A
0004	RO	kW	Float	kW
0006	RO	kvar	Float	kvar
0008	RO	kVA	Float	kVA
0010	RO	P.F.	Float	-
0012	RO	Frequency	Float	Hz
0014-0039		Reserved		
0040	RW	kWh Import	INT32	x0.01, kWh
0042	RW	kWh Export	INT32	x0.01, kWh
0044	RO	kWh Net	INT32	x0.01, kWh
0046	RO	kWh Total	INT32	x0.01, kWh
0048	RW	kvarh Import	INT32	x0.01, kvarh
0050	RW	kvarh Export	INT32	x0.01, kvarh
0052	RO	kvarh Net	INT32	x0.01, kvarh
0054	RO	kvarh Total	INT32	x0.01, kvarh
0056	RW	kVAh	INT32	x0.01, kVAh

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### Local Representative

Revision Date: December 14, 2015

# 10 Appendix 3 PMC 220 Certificates

NMI 14/2/98  
Rev 1



Australian Government  
Department of Industry,  
Innovation and Science

## National Measurement Institute

### Certificate of Approval NMI 14/2/98

Issued by the Chief Metrologist under Regulation 60  
of the  
National Measurement Regulations 1999

This is to certify that an approval for use for trade has been granted in respect of the instruments herein described.

Ceiec Electric Technology Inc model CET PMC-220-C35AE Electricity Meter

submitted by CETA Australia Pty Ltd  
38B Douglas Street  
Milton QLD 4064

**NOTE:** This Certificate relates to the suitability of the pattern of the instrument for use for trade only in respect of its metrological characteristics. This Certificate does not constitute or imply any guarantee of compliance by the manufacturer or any other person with any requirements regarding safety.

This approval has been granted with reference to document NMI M 6-1, *Electricity Meters, Part 1: Metrological and Technical Requirements, July 2012*.

This approval becomes subject to review on **1/02/22**, and then every 5 years thereafter.

#### DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern approved – certificate issued	9/01/17
1	Pattern and variant 1 (Change of model name) approved – certificate issued	13/07/17

Page 1 of 7

## CONDITIONS OF APPROVAL

### General

Instruments purporting to comply with this approval shall be marked with approval number 'NMI 14/2/98' and only by persons authorised by the submitter.

It is the submitter's responsibility to ensure that all instruments marked with this approval number are constructed as described in the documentation lodged with the National Measurement Institute (NMI) and with the relevant Certificate of Approval and Technical Schedule. Failure to comply with this Condition may attract penalties under Section 19B of the National Measurement Act and may result in cancellation or withdrawal of the approval, in accordance with document NMI P 106.

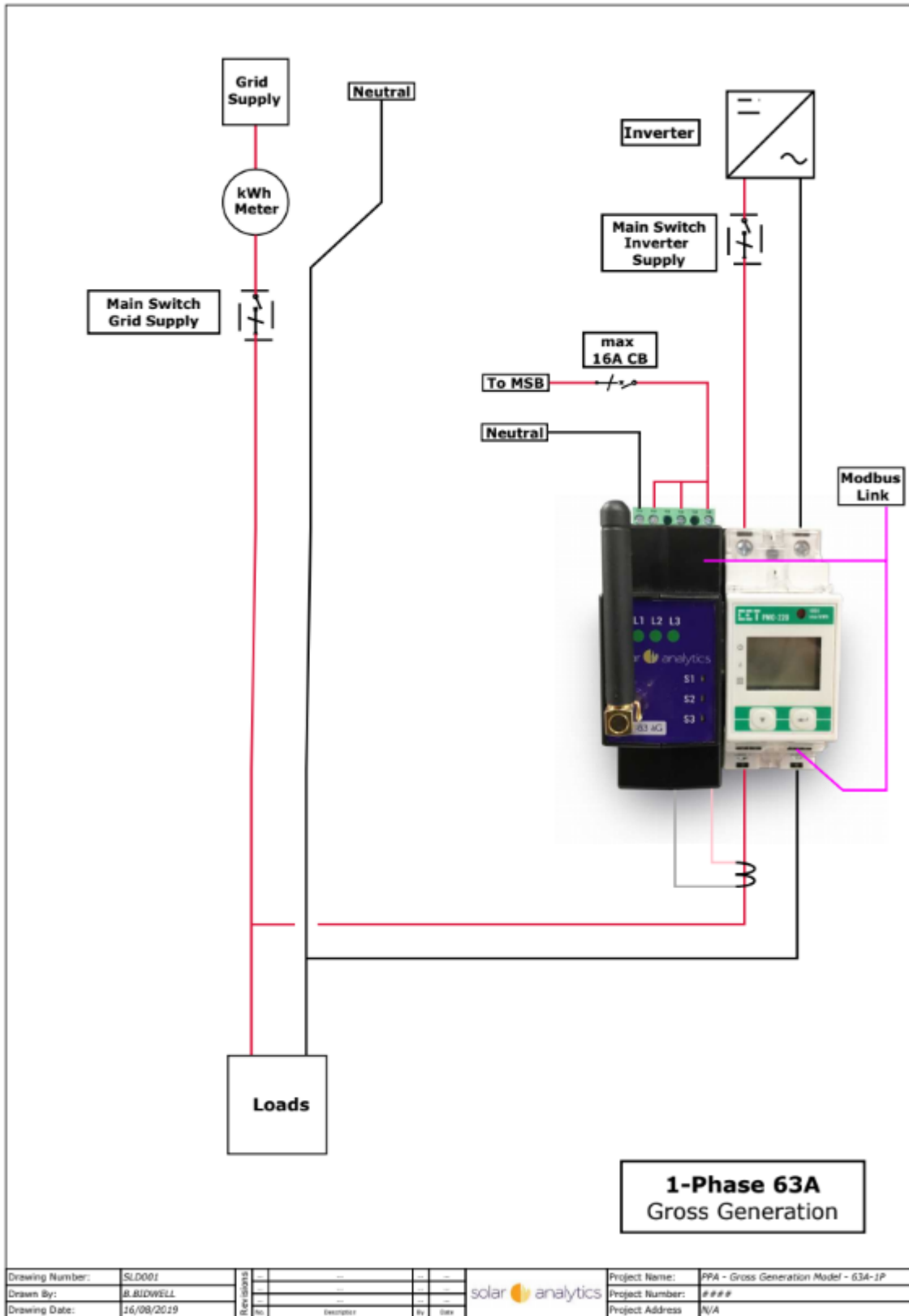
Auxiliary devices used with this instrument shall comply with the requirements of General Supplementary Certificates No S1/0B.

Signed by a person authorised by the Chief Metrologist  
to exercise their powers under Regulation 60 of the  
*National Measurement Regulations 1999.*



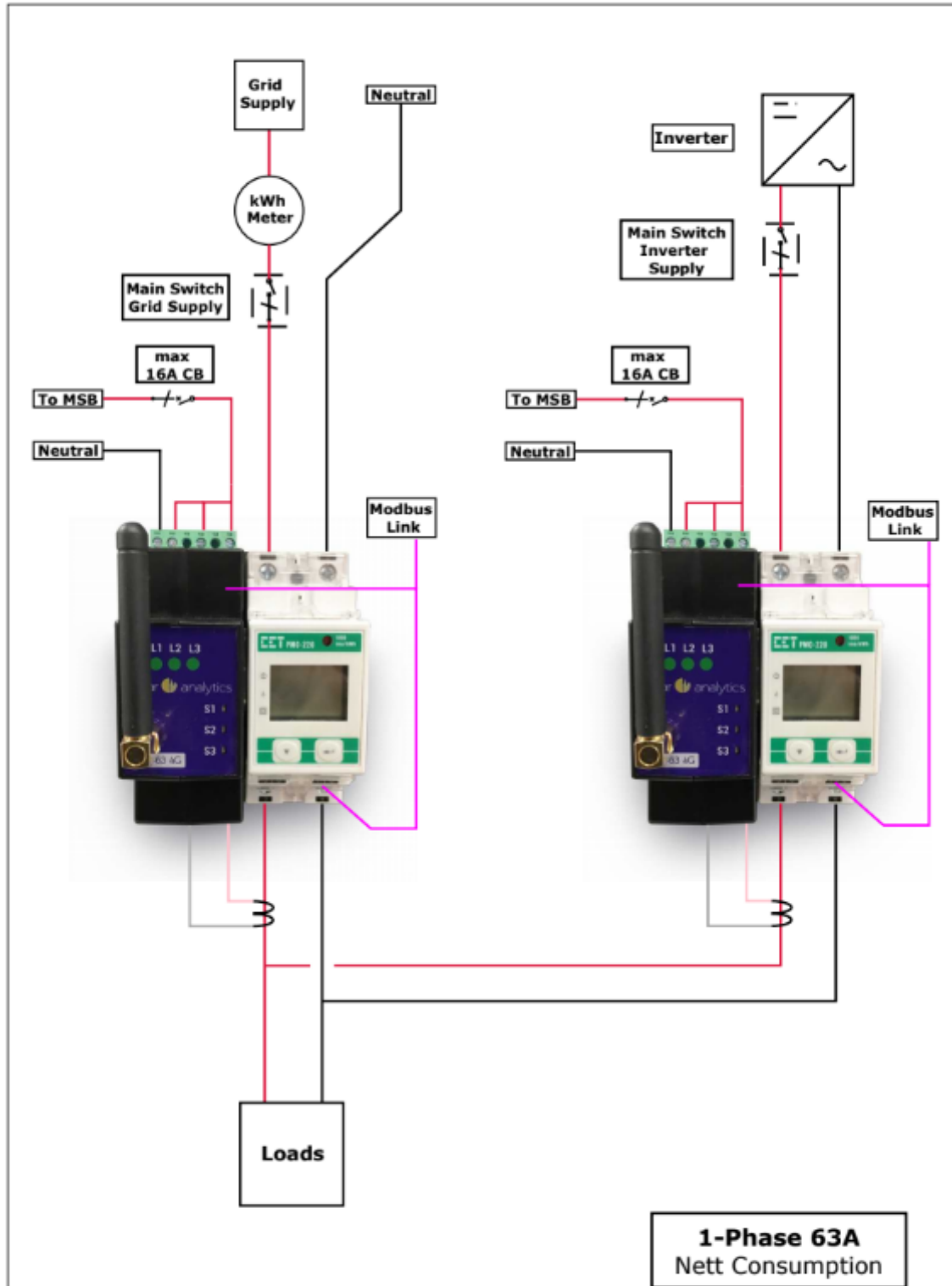
**Dr A Rawlinson**

# 11 Appendix 4 Single Phase Wiring Diagram Gross





# 12 Appendix 5 Single Phase Wiring Diagram Net



Drawing Number:	SLD001	Project Name:	PPA - Nett Consumption Model - 63A-1P
Drawn By:	B.BIDWELL	Project Number:	####
Drawing Date:	16/08/2019	Project Address:	N/A