PERMACONN™

PM54

Installation Manual
Australia

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Table of Contents

Introduction

The Permaconn system provides two-way communication between supervised premises and the Monitoring Centre.

The Permaconn PM54 is a market leading next-generation connectivity solution for any network-ready device or computer system. The PM54 is a 3 in 1 device that combines an alarm communicator with a high-speed 4G router (gateway) and a Wi-Fi hotspot. This allows devices on clients' sites to gain internet access via a range of wired and wireless connections.

This PM54 can interface with a wide range of alarm panels using RS232, Contact ID and IP.

Features of the Permaconn PM54

- Contact ID dialler capture compatible with most panels
- Serial interface supporting multiple panel protocols
- Remote alarm panel Upload / Download to most popular alarm panels
- Three Inputs and three Outputs with function control using Atlas and / or Pocket Secure
- Monitors and reports status of alarm panel dialler interface lead
- No onsite programming required
- RF signal strength indicator
- Router function with Atlas management portal
- Device fully configurable using Atlas via 4G or IP
- Wi-Fi hotspot (Station mode) to connect wireless devices
- Wi-Fi Client (AP mode) allows connection to an existing Wi-Fi network
- One WAN port allows connection to an existing onsite internet gateway
- Two LAN ports to connect to wired devices, alarm panels or network switches
- LTE Gateway capable of 5Mbps uplink and 10Mbps downlink
- Configure IP settings using a cellular 4G remote connection
- Dual SIM 4G LTE with 3G fallback communicates on Optus and Telstra networks
- Non volatile memory stores all setup information in the event of a power failure

Atlas Web Platform

Atlas is a secure web portal that enables users to activate, interrogate and configure Permaconn communicators and routers remotely for diagnostic and control purposes. This portal can be accessed via the web using any Smartphone, Tablet or PC. We strongly recommend using the portal to verify your install. Sign up or log in at https://www.permaconn.com/products/software/

Poll Plans

Supervisory Period	Single SIM	Single SIM + IP	Dual SIM	Dual SIM + IP
Class 2 **12 Hour**	**P2**			
Class 2+ **1 Hour**		**P8**	**P9**	
Class 3 **120 Seconds**		**P13**	**P14**	**P15**
Class 4 **60 Seconds**			**P19**	**P20**
Class 5 **20 Seconds**				**P25**

Data Plans

Data Plan	Data Plan Size
D-500Mb	**500Mb**
D-1G	**1GB**
D-5G	**5GB**
D-10G	**10GB**

WHATS IN THE BOX

- PM54 unit
- Three core antenna set (2 X 4G and 1 X Wi-Fi)
- 611 telephone socket adapter
- Euro style terminal plug (1 X 2 Pin and 1 X 9 Pin)
- 3.3kΩ resistors X 3
- Flat head screw driver
- Velcro mounting tape

Installation Procedure PM54

- PM54 must be activated using the Atlas Portal before applying power. The PM54 will not operate unless it has been activated.
- Place the PM54 housing in the space where you intend to install it. Do not mount the PM54 yet, as it may need to be moved to obtain a better signal strength.
- Screw the antennas onto the 4G Main & Aux SMA connectors; note a single antenna connected to 4G Main is sufficient if the installation is not using the 4G Router feature.
- Apply 10 - 15Vdc to the power terminals. Power is normally obtained from the Alarm Panel. If you are using an independent power supply make sure that you have a common negative.
- The 'HB' LED indicates signal strength and if the processor is operating.
  Operational + Good Signal = [Green – Blinking]
  Operational + Low Signal = [Red Blinking]
- The PM54 may take up to 3 minutes to come 'online'
- Connection to the cellular network is indicated by the
  'MOBILE' LED = [Green – Steady On]
- If the signal strength is low you need to reposition the antenna and/or the unit or make use of a high gain antenna.
- To verify signal strength 'Ping' the communicator using the Atlas portal. Signal strength must be better than -94dBm for reliable communications.
- If you are using the on-site internet, connect a CAT5/6 cable between the PM54 WAN port and the local router or network point. The PM54 will automatically obtain an IP address if it is set to DHCP (Reset).
- Connection to the internet is indicated by the 'IP' LED. [Green – Steady On]
- A four wire connection is required between the Alarm Panel dialler and the PM54.
  - *Option 1*: Plug the original alarm panel dialler lead into the 611 socket on the PM54 to connect the alarm panel.
  - *Option 2*: Use a 4 core cable between PM45 and alarm panel dialler terminals. Connection diagrams available: https://www.permaconn.com/installer-zone/technical-addendums
- 'Ring' & 'Tip' as the input and 'R1' & 'T1' as the return line. If the return line is not connected the 'CID' LED will be [Red - On] indicating a fault. This lead is also used to monitor the interconnectivity between the Alarm Panel dialler and the PM54. If the dialler lead is removed a 'Dialler Lead Interface Fail' event will be sent to the Monitoring Centre. This will indicate that the panel has lost connectivity with the PM54

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Installation Procedure cont.....

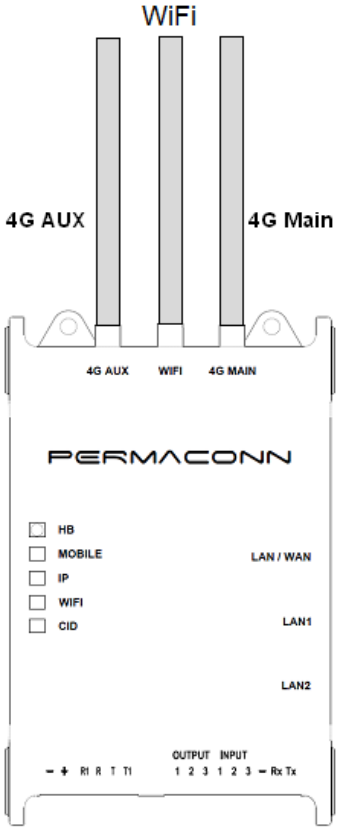
- The PM54 obtains the Panel Account number directly from the Alarm Panel after the first valid contact ID event is sent.
- If a fixed Panel Account number is required - inform the Monitoring Centre before activation.

Programming the Alarm Panel

- The alarm panel must be programmed with:
  - Contact ID
  - Tone / DTMF dialling
  - Four digit Panel ID number
  - 8 digit telephone number (any numbers)
  - Arm & Disarm reporting must be enabled if you are using the Pocket Secure App.
- Trigger an alarm event or test report from the alarm panel. The panel dialler will seize the line and send data on 'R' & 'T'. The 'CID' LED = [Green - Blinking].
- When a valid Contact ID event is sent from the alarm panel the 'CID' LED = [Green - Steady On].
- Ping the PM54 using Atlas to verify the status of the installation.

Antenna Installation

Antennas can have their performance maximised by using a 'Ground Plane', any metal mounting surface will suffice. Please use the supplied 'Ground Plane' plate if you are not mounting the antennas on a metal surface. A significant reduction in performance occurs if an antenna does not have an adequate ground plane.
The PM54 is supplied with three antennas



- If signal strength is low, a high gain antenna may be required. This can be purchased separately from Permaconn or one of our distributors
- Extension cables for the high gain aerial are available

Length in Meters	Part N#
3	EXT3
5	EXT5
10	EXT10

Device Outputs

There are three (3) outputs available.

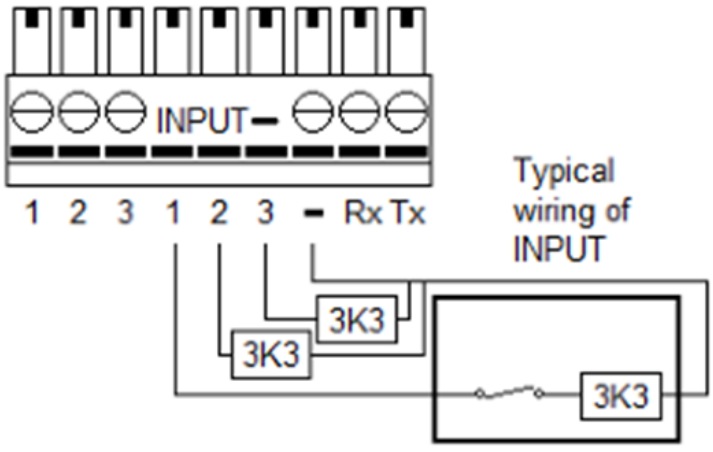
- Outputs are ‘Open Collector’ @50mA switching 12vDC negative—for heavier loads a relay must be used.
- Ensure there is a common negative between the PM54 and the device being switched.
- The outputs can be opened, closed or pulsed using the Atlas web portal
- The outputs can only be pulsed when using the Pocket Secure App.
- Refer to the technical addendums for detailed key switch information.
  www.permaconn.com / Installer Zone / Technical Addendums

Compatible with ‘Pocket Secure’ remote control App. Available on the Apple, Google Play and Windows store

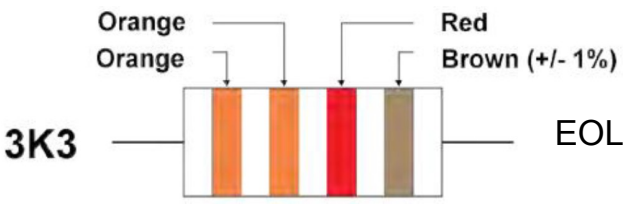
Device Inputs

- There are three (3) inputs on the PM54
- Inputs are programmed as 24hour Instant Zone types.
- Inputs are sealed with a 3.3kΩ resistor if used.

NB: Do not seal inputs if not used.

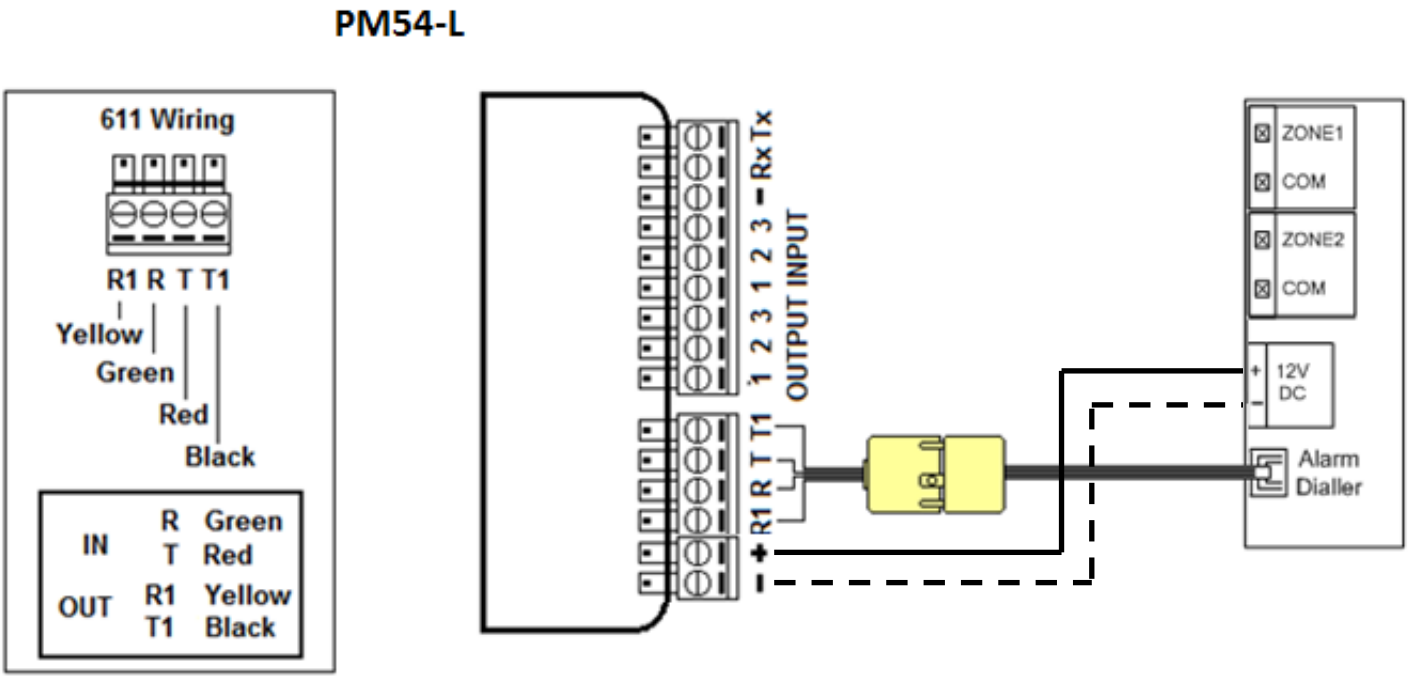


Input	CID	Part	Zone
AUX 1	140	0	981
AUX 2	140	0	982
AUX 3	140	0	983



EOL resistor colour code for Inputs on the PM54

PM54 – Alarm Panel Connection



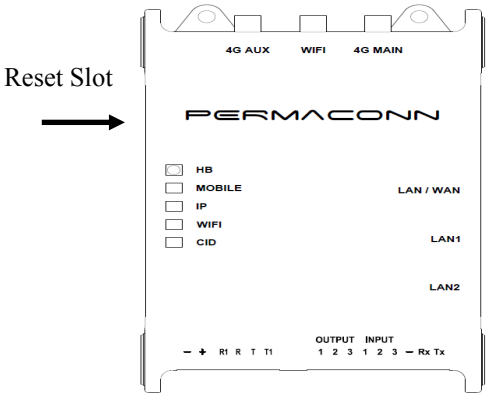
Resetting the PM54

To restore the factory setup on the device:

The PM54 MUST be powered.

- Depress reset button until all LEDs flash green together, this indicates a successful reset
- When resetting the PM54 Do not power cycle device

Caution: Depressing the reset button then applying power may damage the device



Activating the PM54

The PM54 communicator MUST be activated before it is powered up.

Procedure to activate the PM54

- Login to Atlas
- Select the ‘Fleet’ tab
- Click the ‘Activate’ button
- Input Permaconn’s serial number (starting with #)
- Fill in the form and follow the prompts

PM54 - LED Status Indicators

PM54 - LED Status Indicators		
LED	**Activity**	**Indication**
HB	**Green Flashing**	Signal strength OK / Processor OK
	Red Flashing	Signal strength low or trying to reconnect
Mobile	**Flash Red**	Data traffic on 3G/4G
	Green Flashing	Only 1 sim working Applies only to Dual sim plans
	Green On	Unit is Online
IP	**Green On**	Unit is connected on IP network
	Red Flashing	Data traffic on IP
Wi-Fi	**Green on**	WIFI STA mode is turned on
CID	**Off**	Has not received an event
	Orange On	Alarm panel has sent a valid CID event but R1 & T1 has not restored
	Red On	Alarm panel dialler lead faulty
	Green Flashing	Securitel Interface
	Green On	Normal

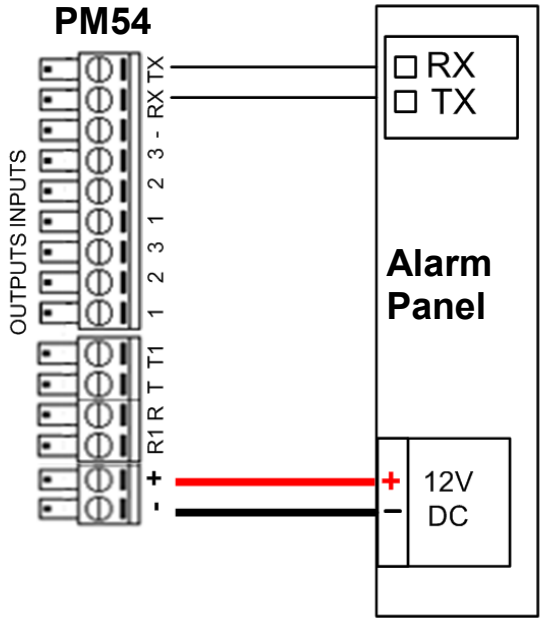
Serial Interface

Compatible Panels	Set as in Atlas
Tecom	STU
Concept	STU
MCM icon	STU
Siemens	STU
Cardax	Cardax

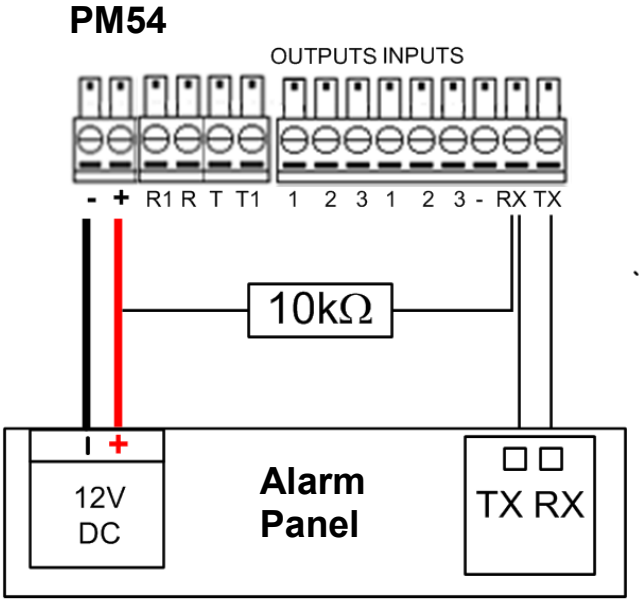
NB: This is set during activation process

The alarm panel must be programmed with:

- Serial Data (contact ID format)
- Account ID



- Tecom
- MCM Icon
- Siemens
- Cardax . (IFM-CDX required)



- Concept 2000 / 3000 / 4000
- 10K resistor must be fitted between +12v and Rx

Upload / Download *(Using Permaconn 4G or IP)*

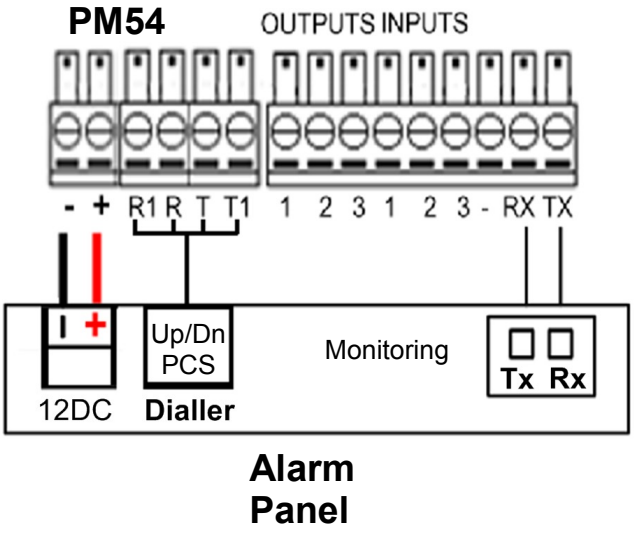
Panel Client Software (PCS) is a virtual modem application that enables remote access to the alarm panels using wireless 4G or Ethernet connection.

If using Serial Data as a monitoring path:

Connect the panel's dialler to the PM54 to allow for upload / download (PCS) capability, an example of this is the Tecom & Concept panels

Note: Disable fax machine defeat and call back.

Enable one (1) call to answer, three (3) rings



List of compatible panels and software

Panel	Software
Tecom V8 & V10	Titan v3.02+ / Forcefield v6.4+ / Titan CT
NX4 / 16 / 128 Reliance	DL900 v4.01+ / DLX900
DL150 / 250 / 300	DASLOAD v6.0
Solution 844 / 16 / 880	A-Link Plus v4.12+
Solution 16i / 16 Plus / 64	Solution Link v1.2.3+
Solution 6000	Solution Link v2.1.1+
Solution 2000 & 3000	A-Link Plus v5.00+
DSC PC4020 / PC1616	DLS2002
DSC PC1616 + PC1864	DLS-5 (v4.2)
Crow Runner 8 / 16	ULD16 (v2.0.0.1+)
Paradox MG-5050 & EVO-192	Winload (v5.50+)
Ness D8	NessComms (v5.6.0.0+)
Risco LightSYS	Config Software (v2.1+)
MCM Icon8	MCM Connect v5.45
Concept 3000 & 4000	Insight Installer (v5.4.10) & Wdirect 6.0+
Digiflex Vision 16 / 64	Vision Link
Protege' LE	Protege' SE
Texecom	Wintex

IP Setup

Before you start you need the following:

- Access to the Atlas portal
- Connect the PM54 to the on-site internet gateway with a standard CAT5/6 patch lead.
- The PM54 must be online (via IP or 4G) and accessible in Atlas to make changes.

To utilize an on-site internet connection:

- Navigate to the IP then WAN tab
- Tick “Enable WAN Connection” and apply

To configure the device for DHCP:

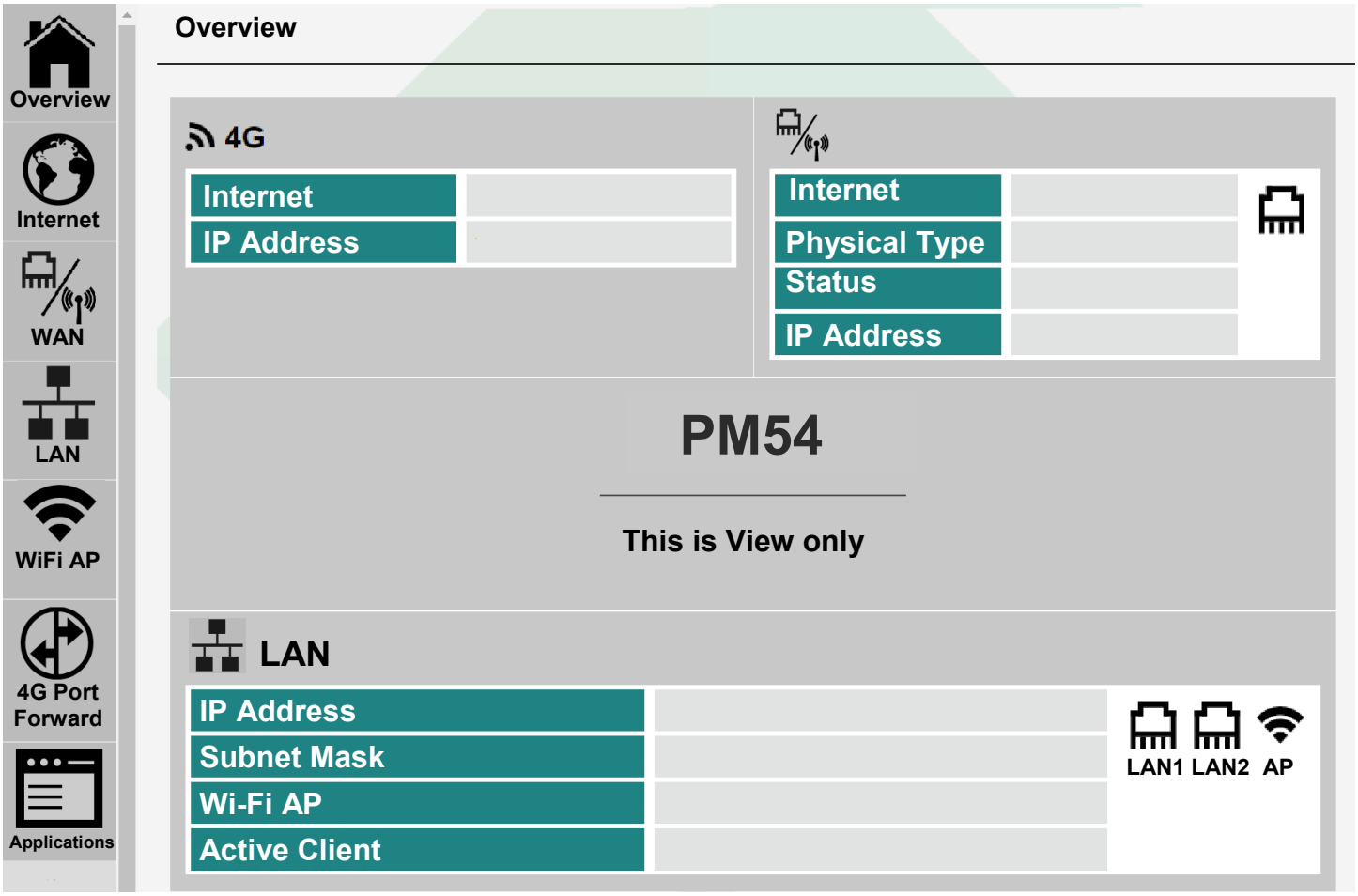
- Select ‘DHCP’ for the ‘Connection Type’ and apply

To configure the device with a static IP:

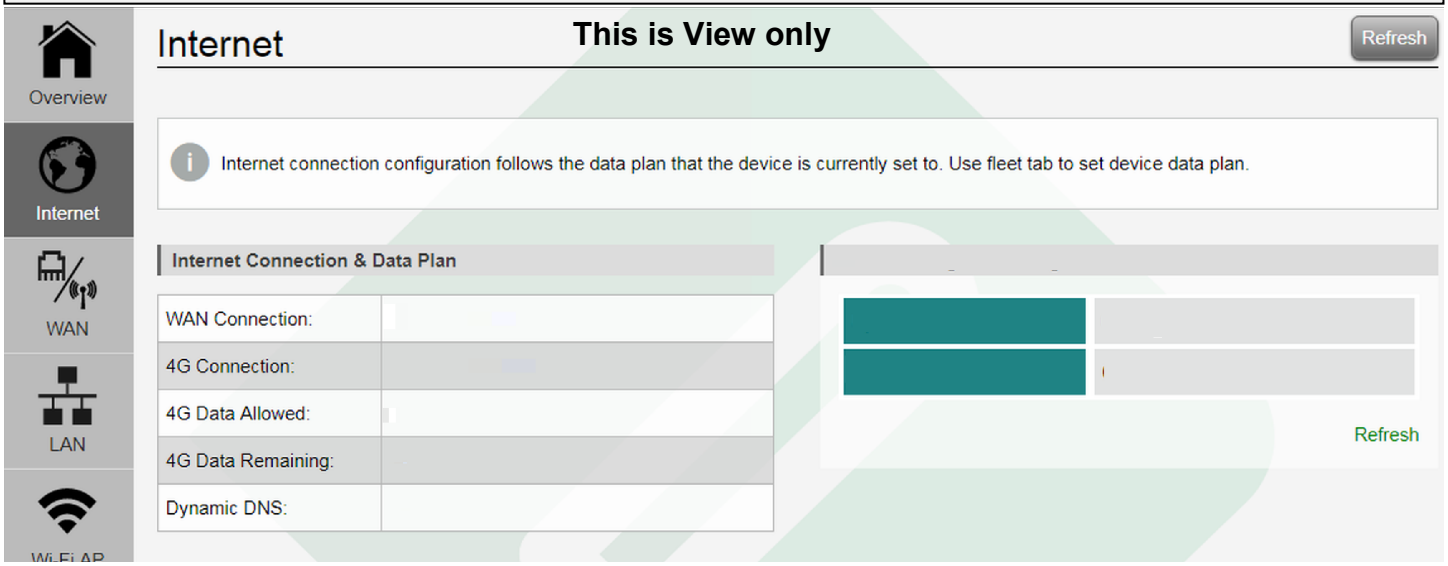
- Select ‘Static’ for the ‘Connection Type’ and apply
- Enter the desired IP, mask and Reset gateway

If using the customers’ router ensure the following ports are not blocked:

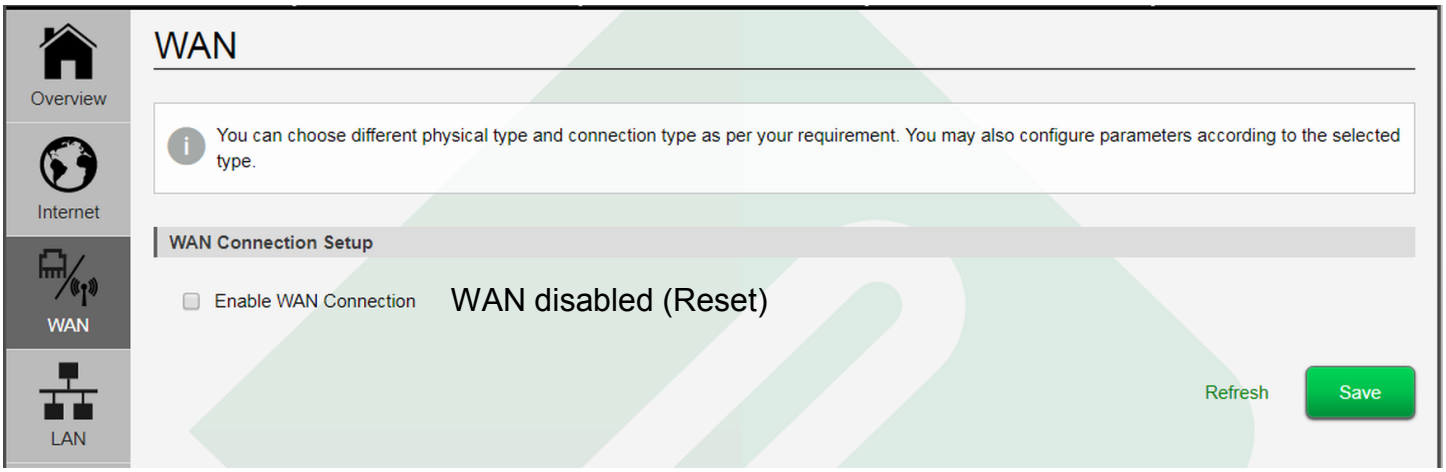
Port	Protocol
11443	TCP
55300	UDP
55530	UDP
59681	UDP



IP Setup *cont.....*



Configure the WAN interface to connect to an on-site Internet Gateway



Utilising the customers' internet:
1: Connect a Cat5 / 6 cable between the WAN port on the PM54 to the customers' internet router
2: Tick the Enable WAN connection press save. This will cause the PM54 to reset.
The PM54 utilizes the DHCP protocol to obtain an IP address (Reset Config).

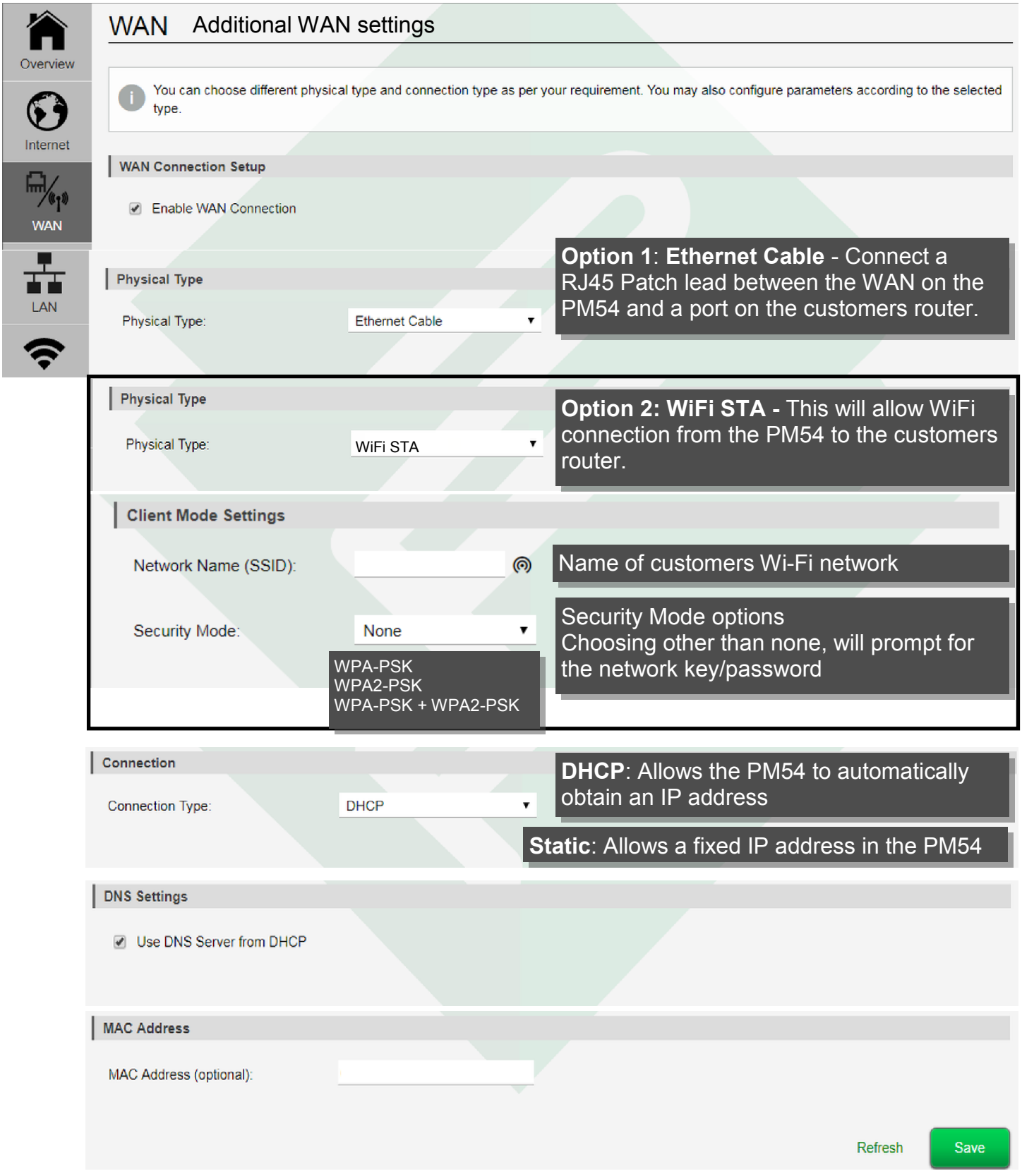
IP LED solid green indicates internet access

IP LED flashing green indicates connection to the customers'' router but no internet connection

Port 55530 UDP may be blocked

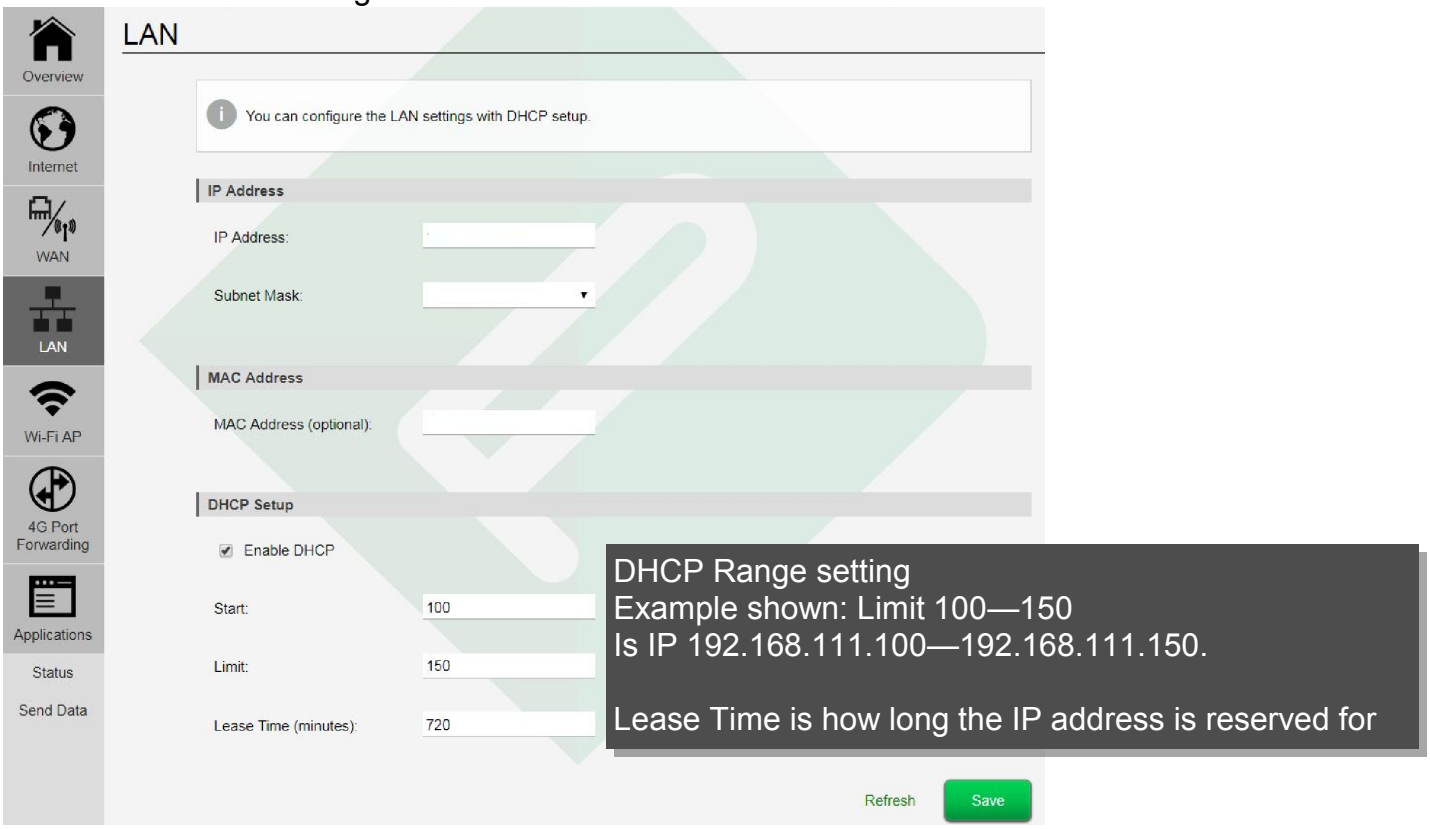
IP Setup *cont.....*

Configure the WAN interface to connect to an on-site Internet Gateway

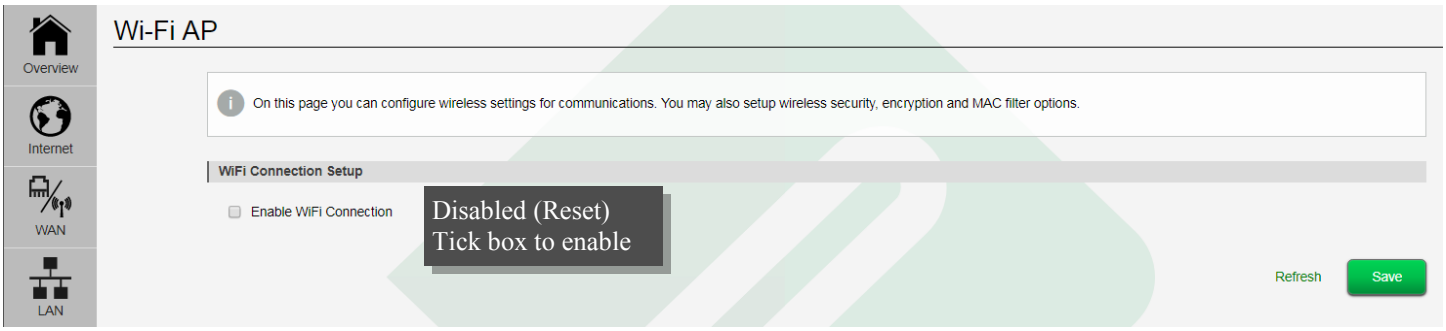


IP Setup cont.....

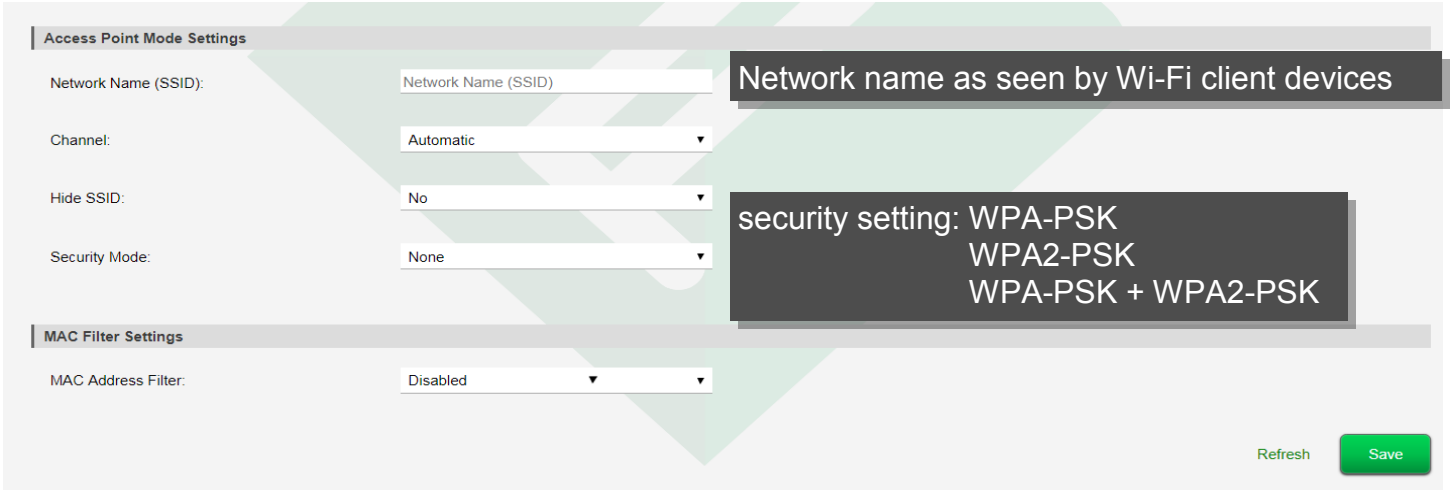
Configure the LAN interface to set a Reset gateway for connected devices and optionally enable the DHCP server to assign IP's to connected devices



Configure a Wi-Fi Hotspot to connect wireless clients and sensors

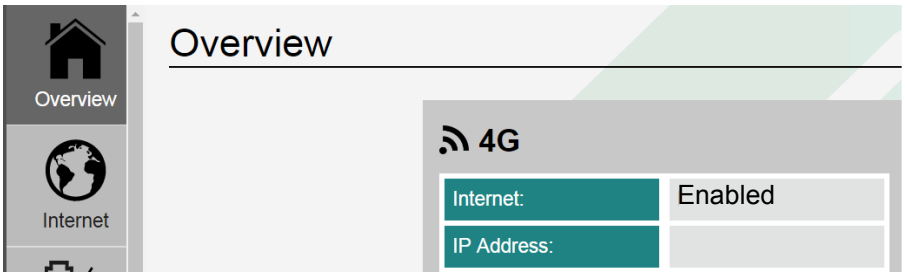


Wi-Fi Enabled



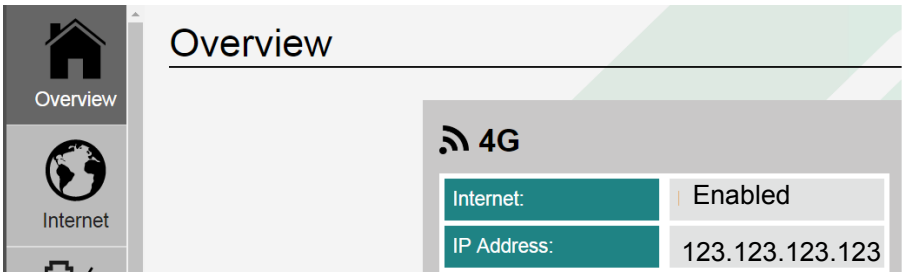
IP Setup cont.....

Allow inbound connections to devices that are connected to the PM54 LAN port from the internet

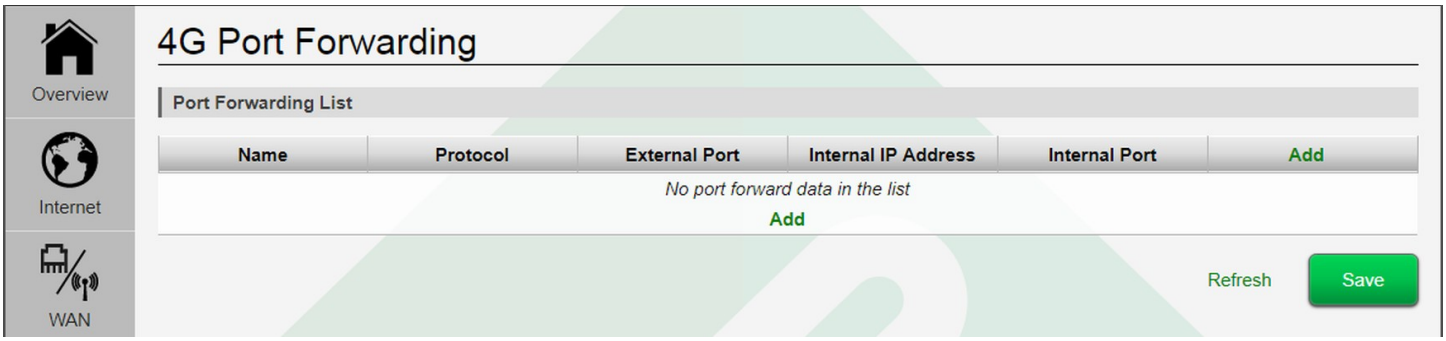


Using the standard Data Plan the IP Address field is hidden.

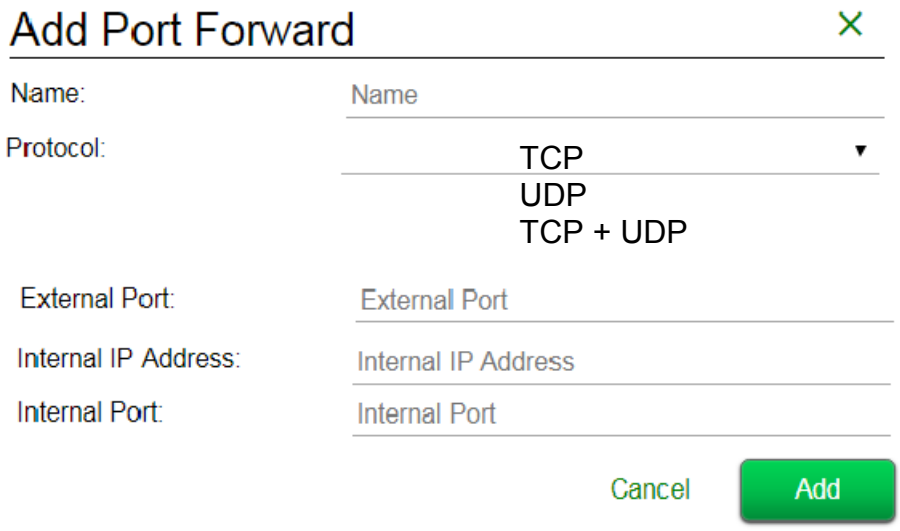
To use the Port forward option, please call Permaconn to obtain a Data Plan containing a Public IP address, there are a limited number available.



Port Forwarding must be done in Atlas, Once the IP Address can be viewed select the 'add' button



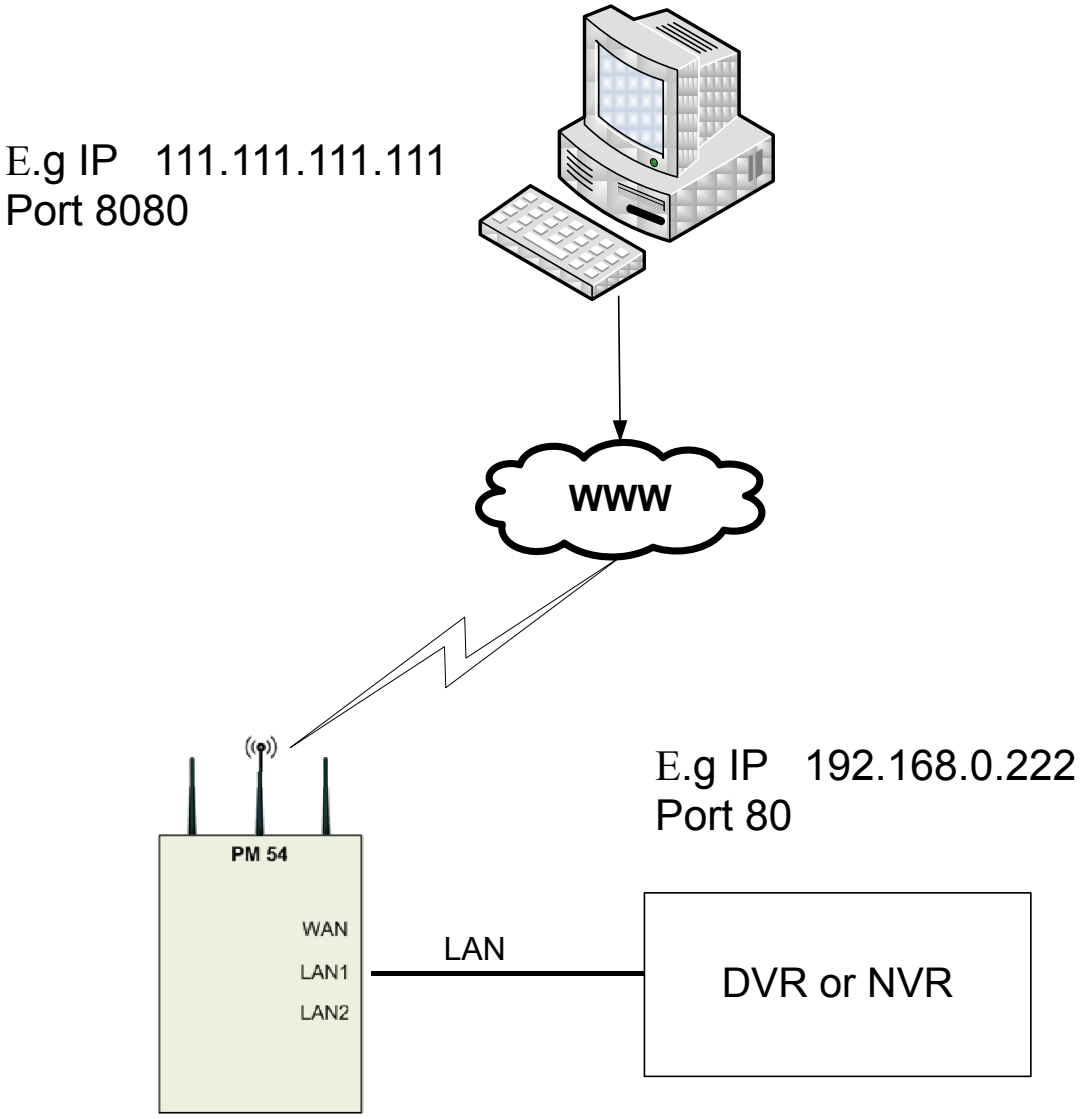
Port Forward setup will appear

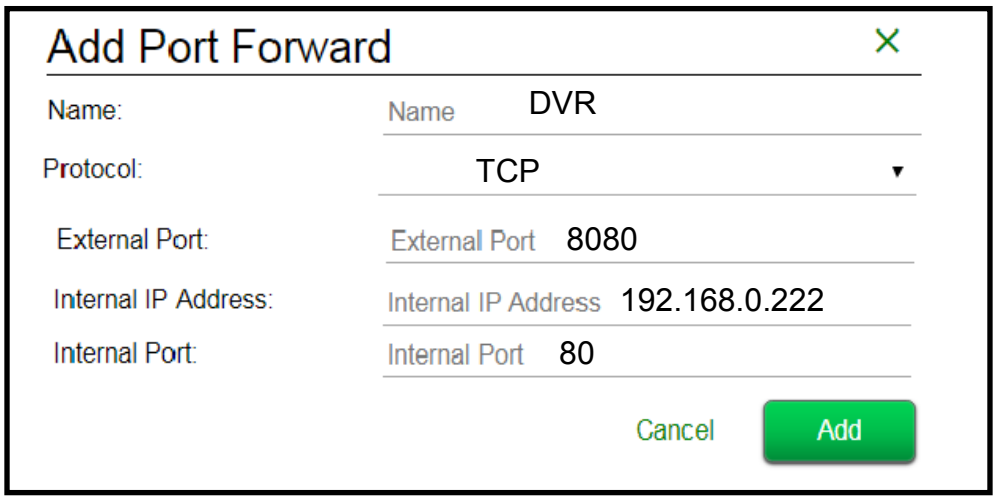


Select Add when completed

IP Setup cont.....

Port Forwarding example: Using the PM54 as an Internet Router

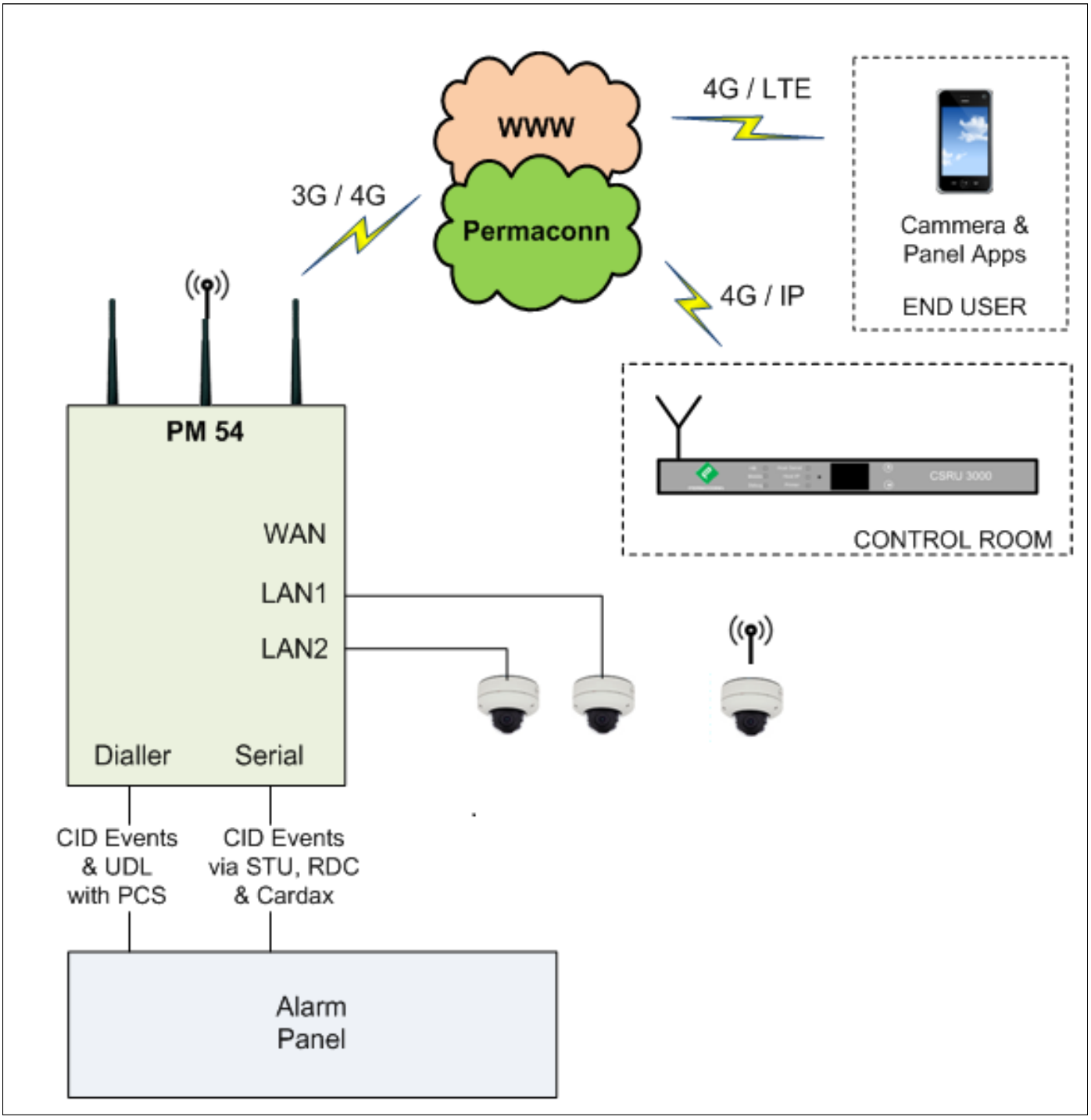




Device Use Case

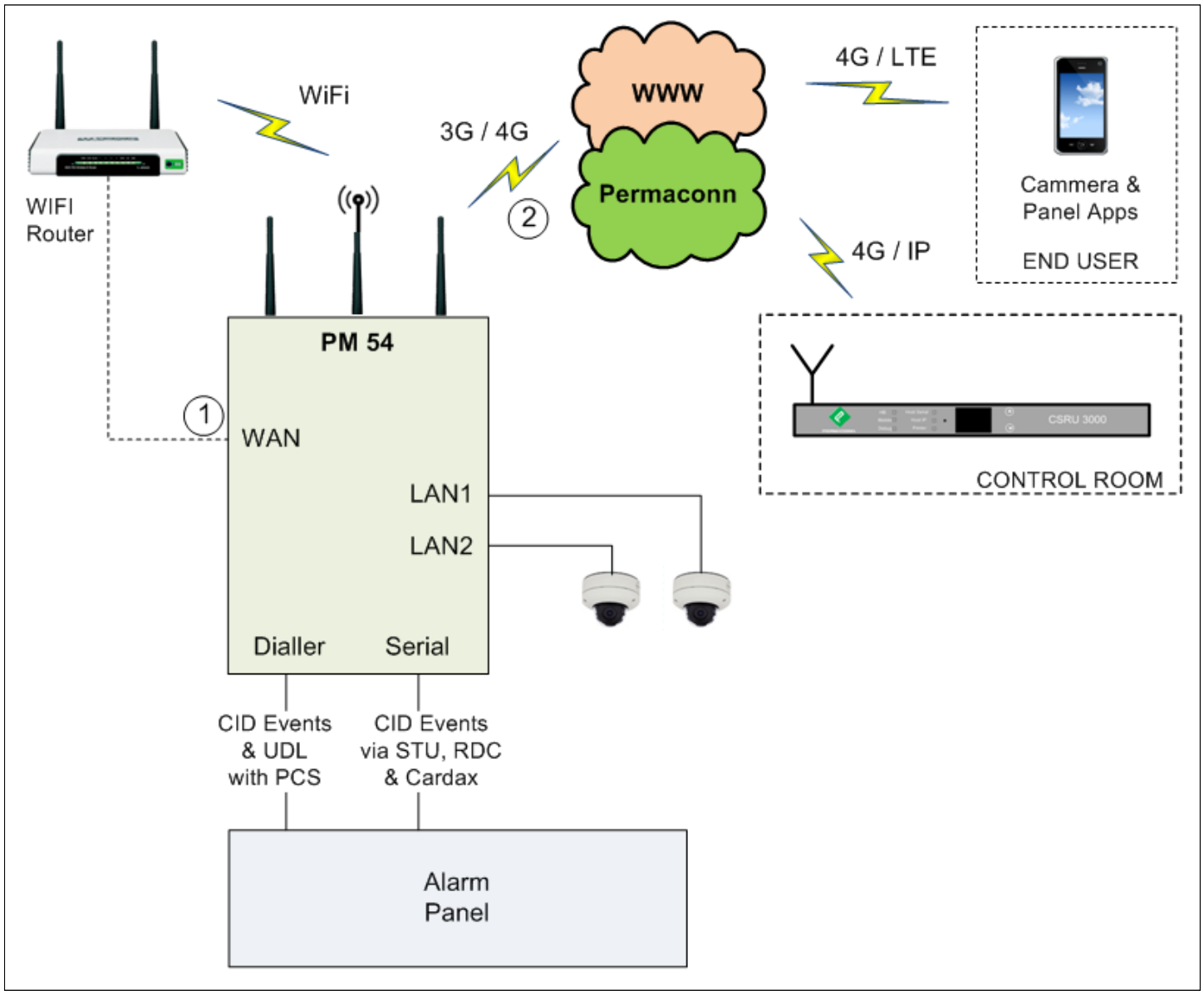
Standalone Alarm Communicator providing an Internet Gateway

This configuration will deliver alarm events to the control room, allow remote UDL of the alarm panel, allow remote management of the Input / Output via Pocket Secure and provide an internet connection to both wireless and Wi-Fi devices connected to the PM54 device.



Alarm Communicator providing a fallback Internet Gateway

This configuration will deliver alarm events to the control room, allow remote UDL of the alarm panel, allow remote management of the Input / Output via Pocket Secure and provide an internet connection to devices connected to the PM54 device; (if the internet connection provided by the on -site Wi-Fi router fails). This configuration provides a redundant internet connection. The PM54 can connect to the Wi-Fi router via a cable if convenient otherwise it may connect as a Wi-Fi client to avoid cabling effort.



Transmission Delay Times

- Messages originating from the Alarm Panel are forwarded immediately.
- Alarm Panel ‘Dialler Interface Lead Fail’ is sent if not restored within 90 seconds.
- Arm / Disarm reporting will occur after the alarm panel’s programmed exit/entry delay.

Permaconn Contact ID Event Template

Event ID	Part	Point ID	Description
313	00	954	Engineering Reset — No Action Required
350	00	953	Fail to Communicate — Communicator experienced trouble sending signals, Do not expect restore.
352	00	956	Dialler Interface Lead Fail — Issue with dialler lead between Permaconn communicator and Alarm Panel.
356	00	968	Permaconn Communicator — IP path poll fail.
356	00	969	Permaconn Communicator — Cellular network path poll fail.
356	00	970	Permaconn Communicator — Communicator is offline.
140	00	981	Auxiliary 1 — Auxiliary input alarm on communicator.
140	00	982	Auxiliary 2 — Auxiliary input alarm on communicator.
140	00	983	Auxiliary 3 — Auxiliary input alarm on communicator.
300	00	984	Panel ID Clash— When two (2) Permaconn devices are reporting to the same Control Room on the same line number using the same account number. *NB: Check in Atlas for duplicate account number.*

Permaconn Contact ID Event Template cont….

Special Events generated by the new Permaconn 54 Communicator

Event ID	Partition	Zone	Description
685	00	980	Data Usage has reached 80% of allowance
685	00	995	Data Usage has reached 95% of allowance
685	00	999	Data Usage has reached 100% of allowance
687	00	981	LAN 1 Cable disconnected
687	00	982	LAN 2 Cable disconnected
687	00	983	LAN 3 Cable disconnected

Special Events generated by the Check my cctv service

Event ID	**Partition**	**Zone**	**Description**
602	00	986	CCTV Test Report
700	00	986	CCTV Unknown Failure
711	00	986	CCTV HTTP Fail
712	00	986	CCTV IP Fail
713	00	986	CCTV Disk Recording Fail
714	00	986	CCTV Disk Access Fail
715	00	986	CCTV Camera Fail
716	00	986	CCTV Image Check
717	00	986	CCTV System Restart
718	00	986	CCTV Recording Time Alert
719	00	986	CCTV Time Accuracy Alert

PM54 Specifications

4G LTE-FDD	Frequency:	B1(2100) B3(1800) B5(850) B8(900) B28(700)
	Bandwidth:	Max 10Mbps (DL) Max 5Mbps (UL)
3G HSPA+	Frequency:	B1(2100) B5(850) B8(900)
	Bandwidth:	Max 42Mbps (DL) Max 5.76Mbps (UL)

Antennas 2 antennas for Cellular (MIMO) + 1 for Wi-Fi

WIFI Capability Supports: IEEE 802.11b/g/n
Frequency: 2.4GHz

Ethernet Specs Ports: 3 x RJ-45 port
Physical layer: 10/100Base-T
Data rate: 10/100 Mbps
Interface: Auto MDI/MDIX

Routing/Failover IP pass-through; NAT, NAPT with IP Port Forwarding;
DHCP; DNS Client and Server

Failover Automatic failover/ failback to second cellular SIM, Wi-Fi or Ethernet.

Management Remote configuration via Atlas web portal

Data Modem 2400 baud modem for alarm panel remote upload / download

Serial Port High Speed RS232 interface for serial connection to alarm and access control panels.

Auxiliary Input 3 x 24Hr inputs state change detected every second EOL 3.3K

Auxiliary Output 3 x Open Collector outputs @ 50mA (max). Function control using Atlas web portal and/or Pocket Secure app.

Dimensions 110mm (h) x 25mm (d) x 80mm (w)

Weight 180g

Power 10 to 15V DC

Consumption Idle 0.12A @13.8V DC

Transmitting: 0.35A @ 13.8V DC

Warning

INSTALLATION MUST BE CARRIED OUT BY SERVICE PERSONNEL ONLY

The socket-outlet must be installed near the equipment and easily accessible.

The unit must only be operated with the supplied antennas. Install the PM54 in a location where no person is closer than 200 mm to the antennas at all times.

Telephone plugs and connectors must be installed inside the metal enclosure of the unit. Interconnecting cables must be placed in conduit.

The unit must be installed in accordance with this manual for proper operation.

Standards require regular service by qualified and licensed technicians and regular testing.

Liability

ANY LIABILITY FOR CONSEQUENTIAL AND INCIDENTAL DAMAGES IS EXPRESSLY DISCLAIMED. RDCCO Pty Ltd AND PERMACONN LIABILITY IN ALL EVENTS IS LIMITED TO, AND SHALL NOT EXCEED, THE PURCHASE PRICE PAID.