iOPTIMA REMOTE MONITORING SYSTEM (RMS)

INSTALLATION, CONFIGURATION AND COMMISSIONING MANUAL

UCM 278681

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1. Introduction

1.1 HEALTH AND SAFETY WARNING

Persons permitted to use and/or work on this equipment must be appropriately qualified and trained. The contents of this handbook and all other relevant documents, safety notes, labels, etc **MUST** be observed.

This equipment may be connected to Mains Voltage. The mains power supply **MUST** be isolated before any connections are made/removed or maintenance work commenced.

This equipment **MUST** only be connected to the specified incoming mains power supply, in accordance with the current regulations.

This equipment **MUST NOT** be used or modified in any other way other than that for which it is intended. Any such use or modification will invalidate any warranty.

1.2 Overview

This document describes the required steps to allow an engineer to physically install, configure and commission a traffic signal site that requires RMS.

IMPORTANT - Remote monitoring will function with iOptima traffic signal controllers using firmware version 2.10 but battery back-up requires firmware version 2.11 or later.

2. Equipment

NOTE that this document was re-written for issue 7 to take into account the change from the RUT500 to the RUT950 router and the following part numbers have been updated accordingly.

The level of kit required will depend on whether the site is a new installation of RM (i.e. no existing communications equipment) or a retrofit of battery back-up.

There is also the choice of communications equipment to consider (3G/4G or ADSL).

For a new installation, order:

Part Numbers	Description
KOPS0307AB	Battery backup kit including cables
MSSW0002AA	RM licence

Table 1 - Equipment List for New Installation

For 3G/4G communications, order:

Part Numbers	Description
EQMT0066AA	RUT950 Router
MSTU0011AA	External 3g/4g aerial
EQMT0067AA	DIN Rail Mount

Table 2 - Equipment List for 3G/4G Communications

For ADSL communications, order:

Part Numbers	Description
200-101-060	ADSL Router and power connector

Table 3 - Equipment List for ADSL Communications

To retrofit battery back-up to a site that is already on RM it is only necessary to order KOPS0307AB:

Kit	Part Numbers	Description
KOPS0307AB	EQMT0024AA	Battery backup Unit
	ASSY0119AB	Backup router power cable (not used for ADSL option)
	ASSY0120AA	Backup controller power cable
	ASSY0121AA	Backup serial cable

Table 4 - Equipment List for Battery Backup Retrofit

The following, optional, equipment is available for providing additional DIN rail space:

Part Numbers	Description
200-1601-080	19" Rack Mount DIN rail 6U Plate

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200-1601-090	19" Rack Mount DIN rail 3U Plate

Table 5 - Optional DIN Rail Plates

NOTE that the routers are supplied unconfigured and should be set up as per the router configuration guides – UCM 437460 (3G/4G), UCM 417665 (ADSL).

3. Installation

3.1 Pre-requisites

3.1.1 Rack Capacity

The following DIN rail space will be required:

1. 3G/4G router and battery backup unit - 250mm
2. ADSL router and battery backup unit - 250mm

The optional rack mounted DIN rail plates can be used to provide additional DIN rail space if required.

3.1.2 Tools

The 3G/4G option requires installation of an external antenna (MSTU0011AA) using a 17mm drill bit to drill the mounting hole in the top of the cabinet.

3.1.3 Additional Information Required

IP address and site name for the controller.

3.2 3G/4G Communications Option

3.2.1 3G/4G Router Preparation

For 3G/4G communications a SIM enabled for data is required.

If the SIM card has not been pre-installed it will need to be installed at this stage.

IMPORTANT – Note the telephone number of the SIM card as this can be used to remotely restart the router if necessary.

To access the SIM card slot, remove the router cover by undoing the four securing screws.

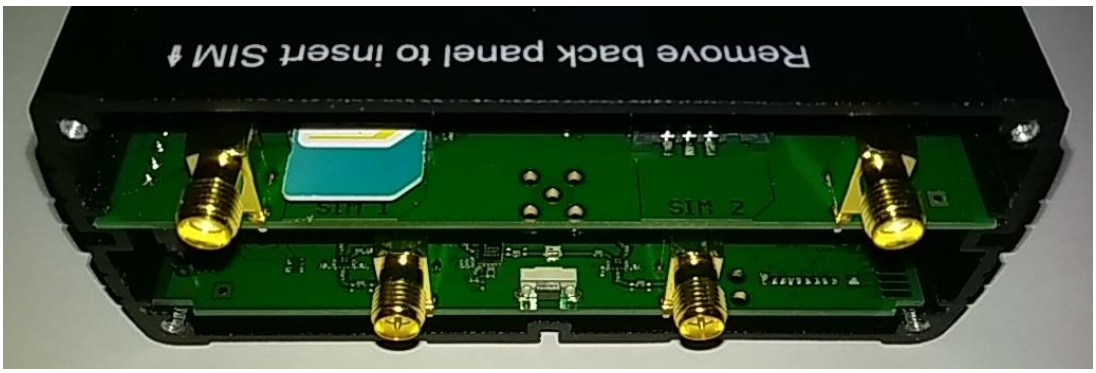

Figure 1

Insert the SIM card into the SIM 1 slot matching the orientation shown on the PCB as per Figure 1.

Replace the cover and the securing screws.

3.2.2 **Mount Antenna**

Drill a 17mm hole in the controller cabinet, the position of this should be on a flat portion of the cabinet ideally mounted on the top as shown in Figure 2.

To fix the antenna to the cabinet pass the cable through the new hole and fit the locking washer and nut being careful not to trap the cable as shown in Figure 3.

The recommended torque setting is 42N.m

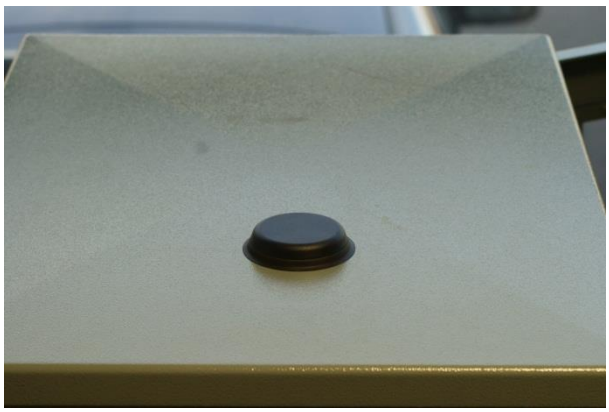

Figure 2

Figure 3

3.2.3 **Mount Router**

Mount the router to a spare section of Din Rail, Figure 4. Note that the picture shows the RUT500 router.

Figure 4

Connect the antenna cable to the router connector “Mobile” and tighten, Figure 5.

Figure 5

Connect the Ethernet cable from the socket marked LAN 1 on the router to the RJ45 socket on the left side of the controller, Figure 6.

Figure 6

3.3 ADSL Communications Option

3.3.1 **Cabling**

Note that, unlike the 3G/4G router, the LAN ports on the ADSL router have been configured for specific connections i.e. Optima Controller, RMU, CCTV and Laptop. If any of these facilities are not fitted then the port should be left unconnected.

Figure 7 - LAN Ports

3.3.1.1 External Communications Cable

Use the supplied cable to connect the DSL (RJ45) port on the router to the telephone socket in the cabinet.

Figure 8 - ADSL Port

3.3.1.2 Network Cable

Connect the network cable from the socket marked 2 / Optima on the router (Figure 7) to the RJ45 socket on the left side of the controller.

3.3.1.3 Router Power Cable

IMPORTANT – Ensure that the Molex connector on the router power cable has been fitted in the correct orientation for the Battery Back-up Unit (BBU):-

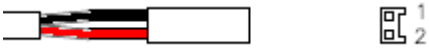

Figure 9 - Router power connector for BBU

Connector	Wire Colour
PIN 1 0V	BLACK
PIN 2 12V	RED

Figure 10 - Connections for power connector for BBU

Connect the bare ends of the router power cable to the power connector on the router, taking care to connect the red (or brown) wire to the V+1 terminal and the black wire to the GND terminal.

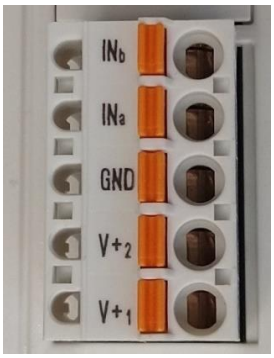

Figure 11 - Router power connector

3.4 Mount Battery Backup

Mount the battery backup unit to the DIN rail, ideally next to the router, Figure 4.

Ensure that the controller is switched off before connecting the crimped ends of the battery backup controller power cable (ASSY0120AA) to the 12V connector (Brown +12v, Black 0v) on the back plane of the controller, Figure 12.

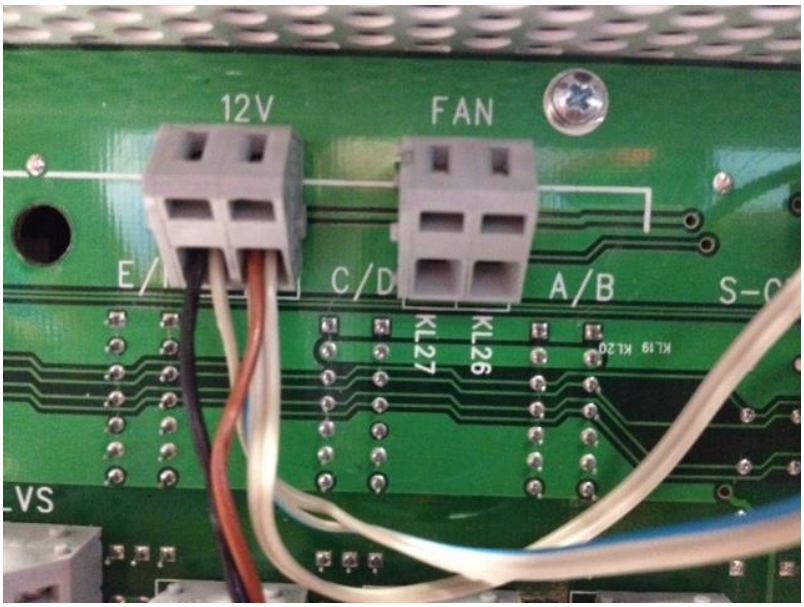

Figure 12

Connect the two pin plug of the battery backup controller power cable (ASSY0120AA) to the connector labelled J4 on the battery backup unit, Figure 13

Figure 13

If the 3G/4G router option has been installed, plug the 2x2 connector of the battery backup router power cable (ASSY0119AB) into the power socket of the 3G/4G router and plug the other end onto the connector labelled J5 on the BBU, Figure 14.

If the ADSL router option has been installed, plug the free end of the router power cable onto the connector labelled J5 on the BBU, Figure 14.

Figure 14

Connect the RS232 cable (ASSY0121AA) from J2 on the battery backup unit (Figure 15) to the controller serial port closest to the front panel of the controller, next to the panel cut-out (Figure 16).

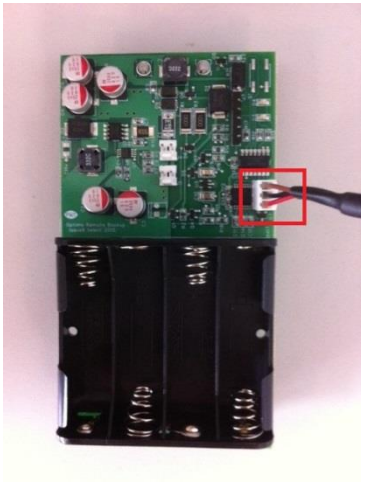

Figure 15 – BBU J2

Figure 16 – Controller Serial Port

Install the batteries into the battery backup unit.

4. Controller Configuration

4.1 RMM Software

A laptop will need to be connected to the controller. Plug the cable into the laptop RJ45 socket and the RJ45 socket marked LAN2 on the 3G router or the port marked Laptop (Port 1) on the ADSL router.

An IP address will be provided by the router by DHCP. (If this does not happen ensure the network settings of the laptop are set to obtain an IP address automatically).

Check to make sure the controller is running a minimum of version 2.10 firmware (2.11 if installing battery back-up).

Using the package manager check that the “RemoteMonitoringManager” package is installed, if not install package “RemoteMonitoringManager.pac”

Using the package manager add the licence number for RMM, this can be obtained from the RMM administrator by supplying the MAC address of the CPU.

Reboot the controller to start the RMM software.

4.2 RMM Setup

Handset commands can be found in the controller handset manual.

Using the controller handset port type RMM to connect to the remote monitoring application and then PWD to enter the RMS password.

A prompt will be displayed PWD:Password? RMM>

Type the Password

The address for the instation is no longer different for each authority. The authority specific addresses previously used will still work but a single new address can be used for all future configurations. Using the “INSTATION” command, enter the in-station IP address as follows “**INSTATION:172.31.32.1:8890**”.

Using the “SITE” command, enter the site ID (normally the SCN of the controller). For example type “SITE:G0143”

The following response will be displayed – SITE:Repeat ID for confirmation

Repeat the Site ID that was typed previously. For example “G0143”

Note that each Site ID should be a unique alphanumeric code, with no spaces, up to 16 characters in length. This will typically be the unique code applied to the controller by the local authority. This is the Site ID which will be shown on the Optima Hub. It should also be the same as the Site ID used during the router configuration process.

4.3 Controller IP Address

The controller IP address can be obtained from the relevant entry in the Authority’s site list, accessible from the company network at http://bacchus.telent.local/SiteList/index.html. An entry for this Site ID should have been created as part of the router configuration process.

For the example shown in Figure 17, the controller address is 172.16.0.74, the router is 172.16.0.73 and the broadcast address is 172.16.0.79

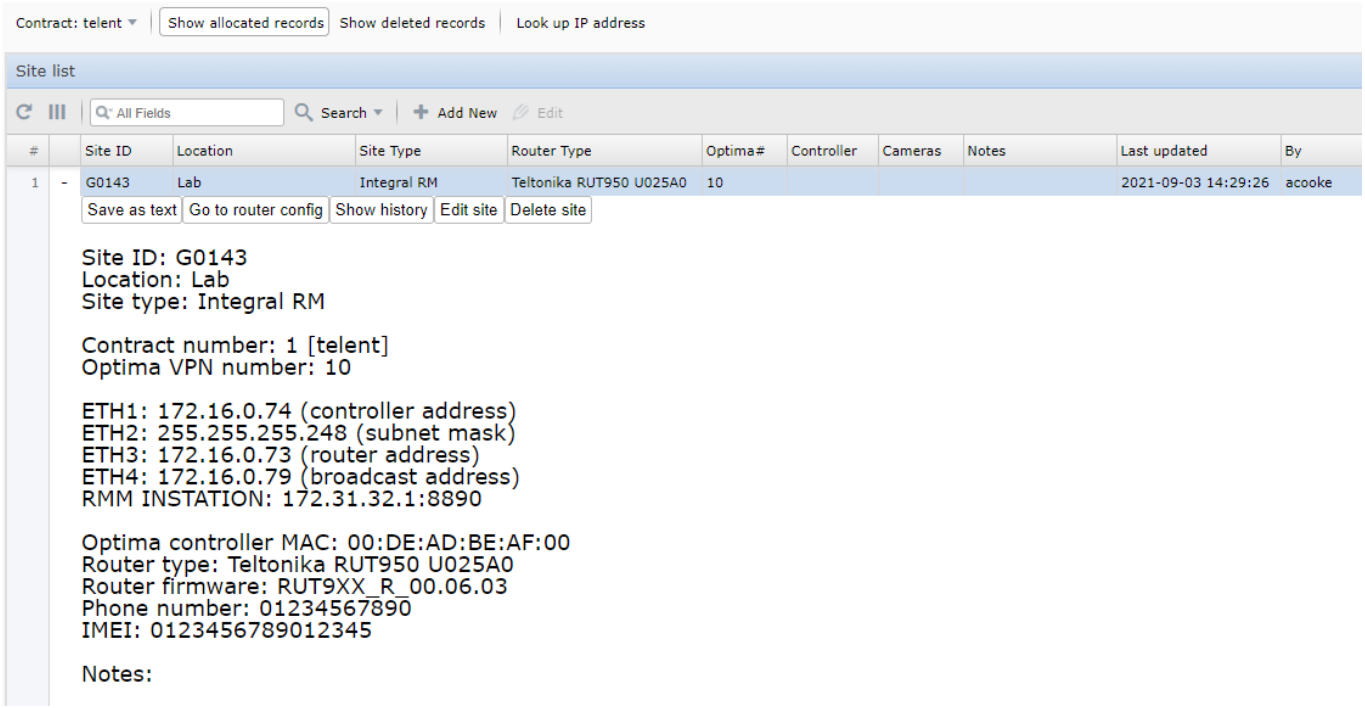

Figure 17 - IP Addresses

The address should be entered in the controller in the following way:

IP address – type “ETH:1=172.16.xxx.xxx” (This is the controller address)

Subnet Mask – type “ETH:2=255.255.255.248” (This is the same for all installations)

Default Gateway – type “ETH:3=172.16.xxx.xxx” (This is the router address)

Broadcast address - type “ETH:4=172.16.xxx.xxx” (This is the broadcast address)

5. Testing

5.1 Router

The 3G/4G router should show the following LEDs on the front - Power, LAN1, Mobile Status and Mobile Signal Strength.

The ADSL router should show green lights for Power, DSL and Port 2 Optima.

5.2 Controller

Connect the Handset to the controller and type “RMM”, returning the RMM prompt, RMM>.

Type “COMMS”, this should return the response “UP”. If this does not provide the correct response the steps in section 5.3 must also be completed.

Complete Appendix A and leave a copy in the controller cabinet.

5.3 Further Testing

Ensure a network cable is plugged in from the router to a laptop. (An IP address will be provided by the router by DHCP)

Open a command prompt on the laptop.

Type Ping followed by the IP address of the router, this will be provided with the router and is the same as the default gateway configured in the controller. (for example type, “ping 172.16.XXX.XXX” followed by return)

Make a note of the response.

Ping the IP address of the in-station server (172.31.32.1) and make a note of the response.

Ping the following url “ping.telenttrafficrm.co.uk” and make a note of the response.

Finally ping the address of the in-station firewall (82.110.99.158) and make a note of the response.

Contact the network administrator with the collected information for further assistance.

6. In-Station Configuration

6.1 GUI

Once the site has successfully connected to the In-station server it is necessary to connect the GUI and add the site to the relevant contract. To perform these tasks contact the network administrator with the following information.

1. Site name
2. Site location
3. Controller IP address
4. SIM card Phone Number

7. Document Control

7.1 Maintenance and Distribution

This document is subject to formal change and control procedures as required by the Quality Management System (QMS).

7.2 Amendment History

Issue	Date	Change Descriptions	Author
Issue 1	4/1/2013	First Issue	S. Playle
Issue 1i	12/11/2014	Updated to reflect version RM 2.1	S. Playle
Issue 2	27/05/2015	Brought up to date including BBU installation	R Harding
Issue 3	28/05/2015	Corrected part numbers	R. Harding
Issue 4	03/03/2016	Corrected router part number	R Harding
Issue 5	22/12/2016	Reverted to AA for router p/n and updated power connection photo	R Harding
Issue 6	02/05/2017	Added ADSL comms option	R Harding
Issue 7	23/03/2018	Updated for RUT950	R Harding
Issue 8	06/09/2021	Change IP address allocation process	A Cooke

7.3 Abbreviations

ADSL	Asymmetric Digital Subscriber Line
BBU	Battery Back-up Unit
CPU	Central Processing Unit
DHCP	Dynamic Host Configuration Protocol
GSM	Global System for Mobiles
GUI	Graphical User Interface
IP	Internet Protocol
MAC	Media Access Control
QMS	Quality Management System
RM	Remote Monitoring
RMM	Remote Monitoring Manager
RMS	Remote Monitoring System
UCM	Universal Content Management
VPN	Virtual Private Network

7.4 Referenced Documents

Title	Doc Ref	Issue
~~[1] RM IP Configuration Spreadsheet~~	~~288783~~	~~Latest~~
[2] RM Modem Configuration Guide (RUT500)	286701	Latest
[3] ADSL Router Configuration Guide	417665	Latest
[4] RM Modem Configuration Guide (RUT950)	437460	Latest

8. Appendix A

RMM Installation Record	
Site Details	
Site Name / Location	
SCN	
SIM Phone Number	
RMS Site Name	
IP Addresses	
Controller	
Subnet Mask	
Default Gateway / Router	
Sign Off	
Tested By	
Date	
Signature	