



MTGR V2

GTA



Graphical Training Aid

WWW.ROBO-TEAM.COM



Roboteam Ltd. Proprietary Information – Commercially Classified
P/N: DOC00002-B REV.B00

Warranty and Liability

Read the following carefully before operating any part of the MTGR system

- Use of any part of the system (MTGR, ROCU-7, MANP) is exclusively the responsibility of the operator
- All operators must attend the MTGR training course provided by Roboteam and be qualified before operating the system
- Be careful of moving parts to avoid injuries to your fingers or other body parts
- Roboteam Ltd. is not responsible in any way for injuries resulting from misuse of the system
- Do not perform any maintenance procedures before verifying that the battery has been removed from the MTGR and/or the Manipulator Arm
- Do not try and operate the system with batteries other than those specified. This can result in irreversible damage to the system, can hurt the operator, and can damage the surroundings
- Do not look into the lasers and/or into the LED illumination module (both IR and Visible)
- Lasers are eye-safe in accordance with Class IIIa classification



System Components

SPEC



MTGR



ROCU-7+ x2 Protective Film



X2

Battery Pack



X2

Lite Adapter



Manipulator



MPU3



X2

Spring Antenna



X6

Battery US BB-2557/U



Documentation+SW



Battery Charger for BB-2557/U



Tracks Gauge



ROCU7-MPU3 Data Cable
(ROCU-M-2030-00)



ROCU7-MPU3-Battery Cable
(ROCU-M-4000-28)



ROCU-7 Technician Cable
(ROCU-M-2020-00)



Field Tool Kit



Drive & Idler Wheels Set

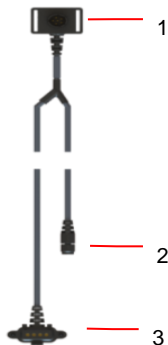


Recovery Rope



Stylus Pen

Supplied Cables



Energy Cable (ROCU-M-4000-28)

Connects the battery to the ROCU-7 and the MPU3 Comm. Unit

1. Battery
2. Power connector to MPU
3. Energy connector to ROCU



Communication Cable (ROCU-M-2030-00)

Connects the MPU3 and the ROCU-7

1. Communication to MPU
2. Communication to microphone
3. Communication to ROCU



ROCU Technician Cable (ROCU-M-2020-00)

Enables DATA updates to the ROCU

1. USB
2. RJ45 (Ethernet)
3. Connects to ROCU

SPEC

MTGR Specification

SPEC

Parameter	Description
Size (length arms closed)	17.9 x 14.5 x 5.7 (L x W x H) inch
With Wheel Kit	18.6 x 18.5 x 6.5 (L x W x H) inch
Weight	16 (19 with wheel kit) lb
Max Payload Weight	20 lb
Speed	2 Mph
Vertical Obstacle	14 inch
Stair Climbing Ability	45°, 8 inches
Communication	Secured IP MESH data link
Operating Range	1600 feet LOS
Power Supply	14V Mil Std
Working Time	2-4 hours (operation mode dependent)
Payload Ports	Power (12-28V), Ethernet RJ45, RS232, Video/Audio
Mechanical interfaces	Standard Picatinny rails
GPS	Internal
Video & Cameras	360° Real time day & night video + zoom x 10 and audio
Sensor Tilt module	-20° - +90°
Illumination module	360° NIR illumination + front white LED

MANP Specification

Parameter	Description
Actuator DOF	4 DOF, (2 Joints, 1 gripper and wrist capability)
Max Gripper Opening	4.3"
System Weight (lb)	2.7
Max Lift Capacity (lb)	10 (fully extended)
Reach Length	14.17"
Camera	Auto Focus Camera, Optical Zoom X10 and close up gripper camera
Illumination	White / NIR LED
Mechanical Interface	Quick release screws and Picatinny rails
Operational Temperature	-4°F to +140°F
Military Standards	IP65

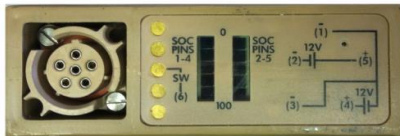
ROCU Specification

SPEC

Parameter	Description
Dimensions (inch)	11.8 x 6.7 (L x W)
Height (inch)	With battery pack - 4.5 Without battery pack - 2.8
Weight (lb)	Without battery - 3.9 Including battery - 5.0
Military Standard	Ruggedized, IP65
Operating System	Windows 7, internal memory 64GB
CPU	1.6 Ghz Dual Core
Screen	7", 1024x600, resistive touch screen, sunlight readable, NVIS compatible, Gorilla glass
Power Supply	14V Mil Std. or 24V Roboteam's battery
Working time	3-6 hours (operation mode dependent)
Interfaces	USB (powered), Ethernet, audio in/out, 2 Joysticks, 8 hard buttons, 4 rockers
Operational Temperature (Mil Std.)	-4°F – +140°F

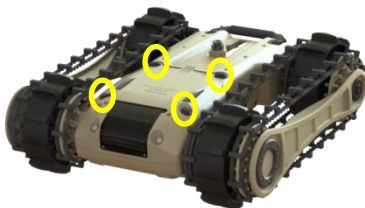
Switching on the MTGR

1. Verify MTGR battery is fully charged



Use only certified batteries: BB-2557 US Military standard battery (3.3Ah).

2. Unlock the 4 battery compartment latches



3. Insert battery into the battery compartment, and close the battery compartment tightly

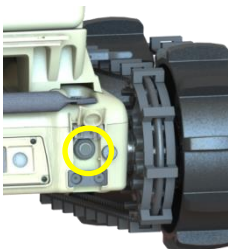


Battery should not be forced in

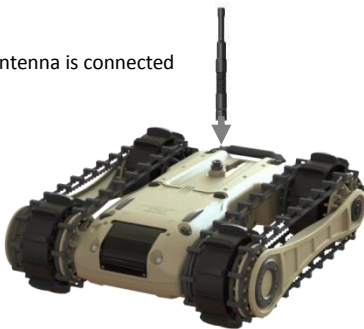
Switching on the MTGR

SETUP

4. Turn on the MTGR by pressing the ON/OFF button, in the rear part of the platform

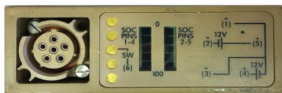


5. Verify an antenna is connected

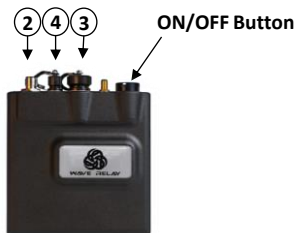


Switching on the Communication Unit

1. Verify Communication unit battery is fully charged.



2. Verify the antenna is connected secured to the Comm. Unit.
3. Connect communication unit to the ROCU using the communication cable (labeled ROCU-M-2030-00)
4. Connect the communication unit to the battery; this will turn on the communication (use the cable supplied, labeled ROCU-M-4000-28)

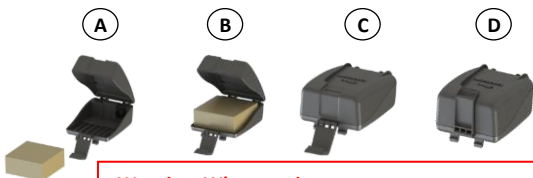


NOTE:

After connecting the MPU3 to the battery, verify the **GREEN LED** is on. If not, HOLD the ON/OFF Button for 3 seconds and release, to turn the MPU3 on.

Switching on the Control Unit

5. Connect the ROCU to the power cable (labeled ROCU-M-4000-28) or insert a battery into the ROCU-7 Battery pack



**Warning: When not in use,
always remove battery from battery pack**

6. Insert battery pack into ROCU-7 (Verify battery is secured)



7. The ROCU-7 is connected to the MPU3 communication unit via the communication cable (labeled ROCU-M-2030-00)

8. Press the ON/OFF button located at the bottom-right side of the ROCU-7. MTGR application will load automatically



9. Verify connection is established by:

- Communication icon is OK
- Video is streaming



Settings

Warning

- Do not make any changes in settings unless you are a certified operator.
- Changing settings improperly can cause system malfunctions.



Settings – General

SETTINGS

No.	Name	Description
1	Magnification	Available only when Tablet is supplied
2	Handle Resolution	Operator can change the screen resolution according to the size of the screen

The screenshot shows the 'General' settings window with tabs for Recording, Platform, ROCU, General, and About. The 'Resolution' section is active, displaying the text 'Resolution (Changes will be applied on the next application relaunch)'. Below this is a checkbox for 'Magnification (Check only if Windows Magnification is On)' which is unchecked. A red box labeled '1' with an arrow points to this checkbox. Below the checkbox is the 'Handle Resolution' section, which contains four radio button options: 'Default (1024x768)', 'Auto Scale', 'Auto Scale if smaller than 1024x768', and 'Custom Scale:'. The 'Custom Scale' option is selected. A red box labeled '2' with an arrow points to the 'Handle Resolution' section. The 'Custom Scale' section includes input fields for 'Width' (1024) and 'Height' (600). At the bottom of the window are buttons for 'Reset', 'Reset All', 'Cancel', and 'OK'.

Settings – Recording

No.	Name	Description
1	Recordings Folder	This is the target folder in which recorded videos are saved on the computer. Videos can be saved in screen capture (regular video) or raw video (4 camera capture). Changing resolution and rate is possible by checking their boxes.
2	Capture Folder	This is the target folder in which recorded images are saved on the computer. Playing sounds when capture is optional by checking the box.
3	Disk Space: For Recording Purposes	<p>Critical Disk Space - defines the critical level for low disk space. Beyond this level, if auto delete is checked, auto deleting will commence. If not, recording will stop automatically.</p> <p>Auto delete - checking this box will enable auto delete when reaching the critical level, according to video date.</p> <p>Limit record time - allows the operator to set a limit on recording time.</p>
4	Video Format	Allows the user to change between three formats: AVI, MPEG-4, and H.264. The values underneath each format displays an estimation of how much space (in terms of footage time) is available

Settings – Recording

SETTINGS

Recording **Platform** **ROCU** General About

Video

Recordings Folder: C:\Program Files (x86)\Safire\Recording **1**

☐ Screen Capture ☒ Raw Video

Resolution: Full Rate: 1/2

Capture

Capture Folder: C:\Program Files (x86)\Safire\Recording ... ☒ Play Capture Sound **2**

Disk Space

Critical (GB) 9 390 **3**

Hard Disk Total Space - 488GB
Currently Available - 410GB
Critical Space - 48GB (10%)

☒ Auto Delete When Running Low
☐ Limit Record Time (min.) 10

Video Format

Estimated Time Left (HH:MM)


<input type="radio"/> AVI	<input checked="" type="radio"/> MPEG-4	<input type="radio"/> H.264
5:59	299:10	299:10

4

Reset

Reset All Cancel OK

Settings – Platform

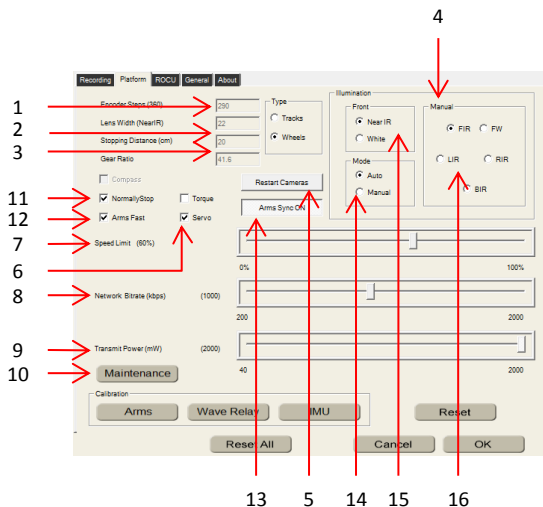
No.	Name	Description
1	Encoder Steps	Allows semi-autonomous navigation (To enable this feature please contact Roboteam (Appendix B)
2	Lens Width (Near IR)	Determines the Zoom lens angle (should not be changed after company settings, unless a lens has been changed)
3	Stopping Distance (cm)	Determines the autonomous stopping distance before objects. To enable this feature please contact Roboteam (Appendix B)
4	Illumination	Controls the Illumination preferences (for more details, refer to the next page)
5	Restart Cameras	Restarts the system's cameras in case of malfunction in the video stream
6	Servo/Torque	Divert power for more torque
7	Speed Limit	Defines speed when in "Turtle" mode. Switching to "Rabbit" will disable speed limit 
8	Network Bitrate	Controls the video compression (increasing compression will result in lower resolution, but higher communication range)

Settings – Platform

SETTINGS

No.	Name	Description
9	Transmit Power	Increase/decrease the Comm. Unit transmit power, and change the communication range
10	Maintenance	Calibration settings (refer to Maintenance Manual for more details).
11	Normally Stop	Lock the system's wheel when not in motion
12	Arms Fast	Controls the speed of the arms
13	Arms Sync	Synchronized the movement of the arms
14	Mode	Auto – When activating illumination, LED will be activated according to currently activated camera; front LED will be activated according to settings Manual – Illumination will be activated according to settings
15	Front (Only in Auto Mode)	Near IR – illumination will activate Near IR illumination White – Illumination will activate White light
16	Auto White Balance	FIR – Front IR illumination FW – Front White LIR – Left IR RIR – Right IR BIR – Back IR

Settings – Platform



Settings – ROCU-7

SETTINGS

No.	Name	Description
1	Buttons	Assign operations to hard buttons
2	Joysticks	Calibrate the Joysticks

Recording Platform ROCU General About

Hard Buttons

1

A Turtle \ Rabbit

B SYNC Arms

C Brightness +

D Brightness -

1 Tilt Absolute

2 Illumination On \ Off

3 Cameras Toggle

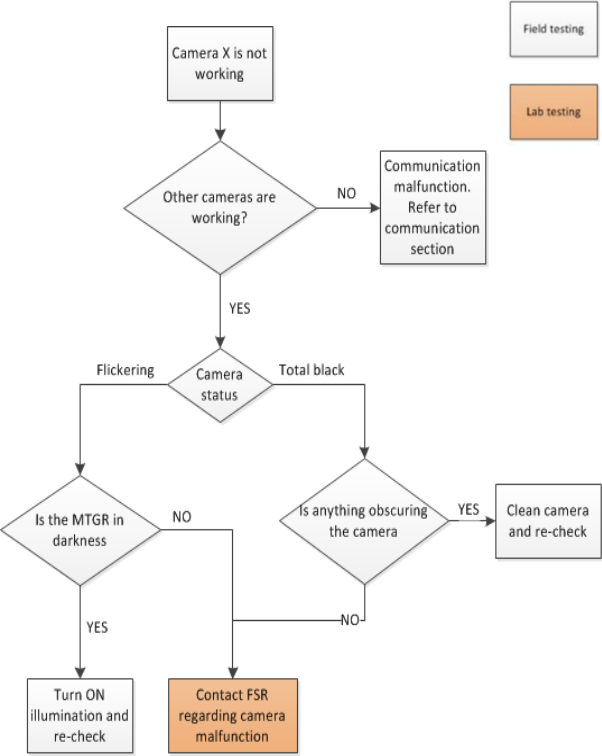
4 Manipulator

Panel Light (128) 0 255

Joysticks 2 Reset

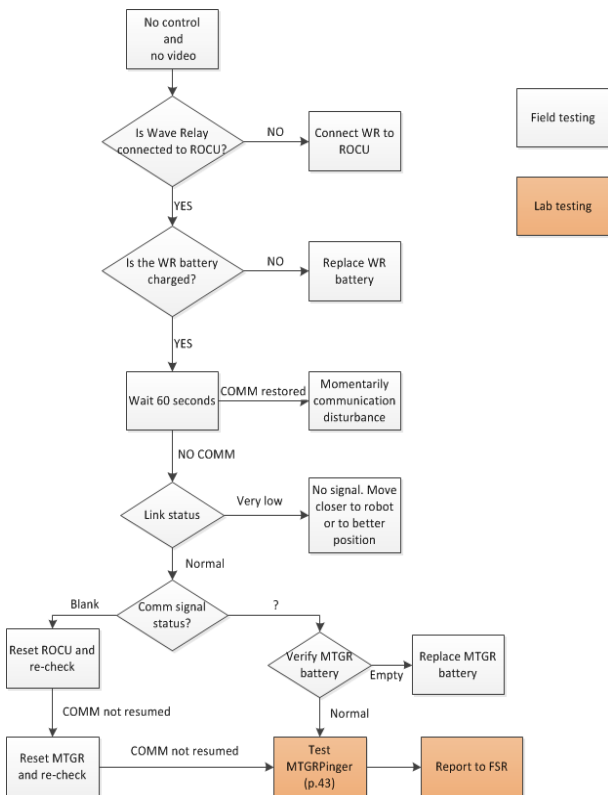
Reset All Cancel OK

Single Camera Malfunction

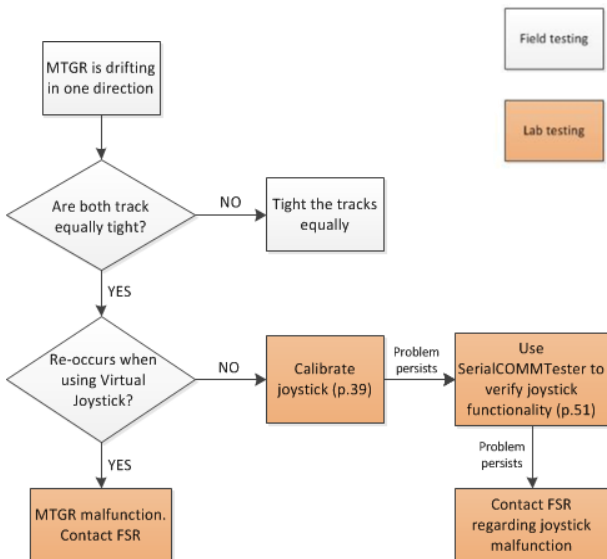


Communication Malfunction

TROUBLE-SHOOTING

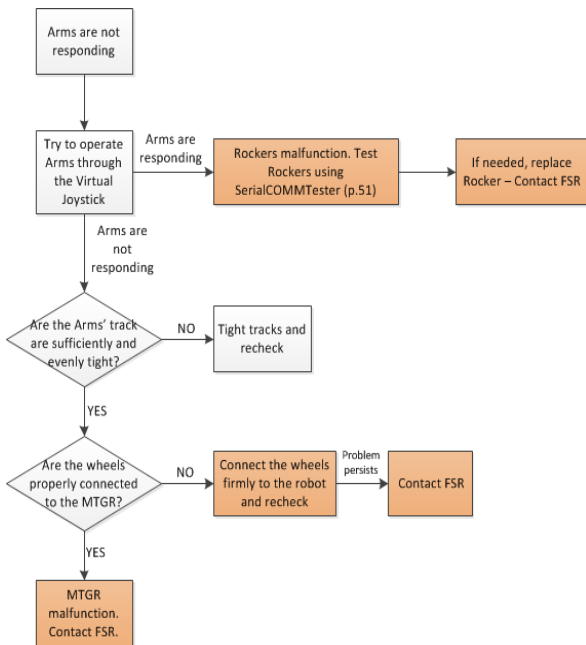


MTGR is Drifting in One Direction

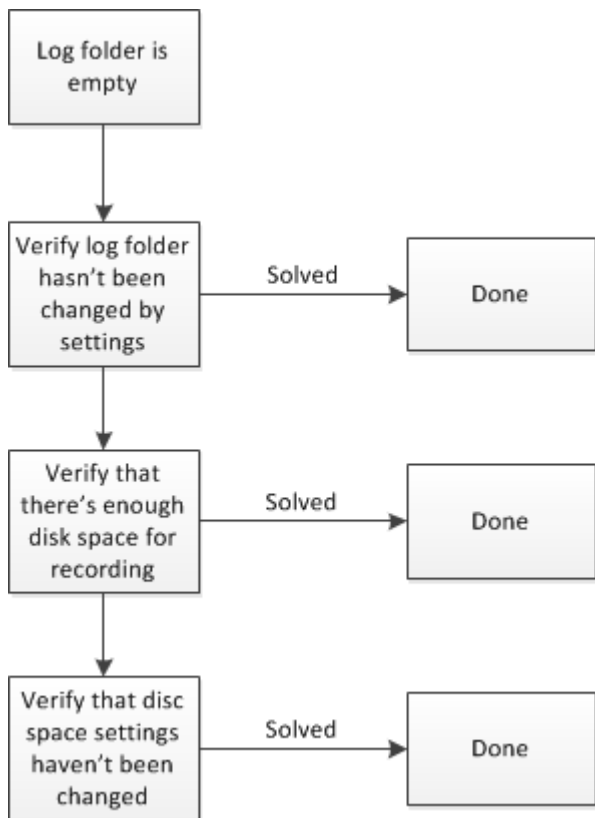


Arms Are Not Responding

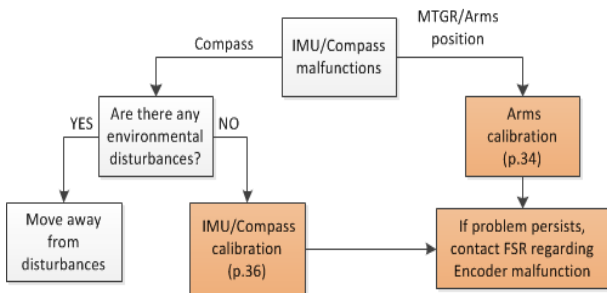
TROUBLE-SHOOTING



Log Folder is Empty

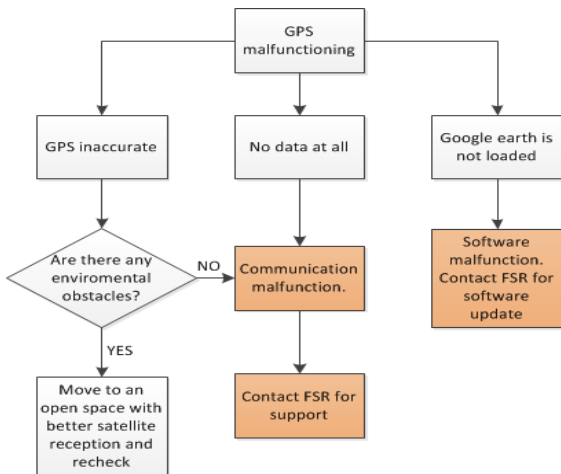


IMU Malfunction / Arms Are Not Calibrated



TROUBLE-SHOOTING

GPS is Not Responding/Accurate



Storage

While not operational, MTGR should be stored according to the following maintenance rules:

- Always store the MTGR together with its ROCU-7 and MPU3 inside the supplied case.
- MTGR should be stored in a dry and cool place.

Remember Basic preparations before every mission!

- Verify batteries are fully charged.
- Tracks are sufficiently tight and secure.
- Cameras' lenses are clean.
- ROCU-7 screen is intact and clean.
- Verify 2 cables are connected and secured
 - MPU3 Battery cable
 - Communication cable

Operational Maintenance

These procedures should be done after every mission to ensure the continuous high performance of the robot.

Operation	Description	Tools Used
Whole Body Cleanup	Remove dust, sand gravel, etc.	Air pump
Cameras	Wipe off dust, mud, etc.	Moist cloth (use specialized lens cleaner cloth)
Main Tracks	Tighten tracks to proper tension	Ratchet wrench handle (drive 1/4" – short handle), 19mm socket Allen 3mm
Arms Tracks	Tighten tracks to proper tension	13mm socket + Ratchet wrench
Battery Compartment	Clean battery compartment and battery connector	Air pump Moist cloth
Batteries	Verify batteries are fully charged	Certified BB-2557 or Roboteam's charger

**MAINT-
ENANCE**

Tightening the Systems' Tracks

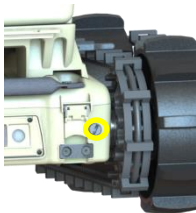
Proper maintenance of the tracks is the key to obtaining the maximum maneuverability from your system. As a basic rule, when driving the MTGR in an urban/indoor environment tracks should be relatively loose, while driving in open field, tracks should be tight.

Main Tracks

1. Open the rear wheel screw with the ratchet wrench with the 3" extension and 19mm Hexagonal Socket Wrench



2. Remove the cap (using a regular flat screwdriver or a coin) and use 3mm Allen Key in order to turn the tension screw to set the tense level



3. Fasten the main screw (using the 19mm socket)

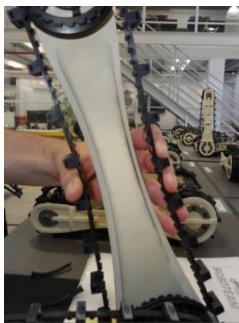


Tightening the Systems' Tracks

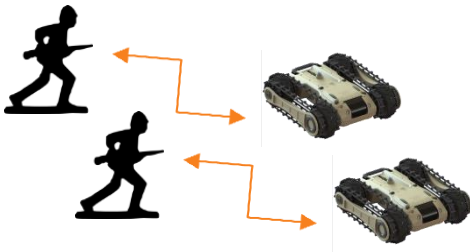
4. Pinch the tracks and make sure they are approximately 3inch (75 mm) apart (use the gauge supplied) - For extra tightening or releasing open the screw and pull backward or forward correspondingly. For the arms' tracks use the 19mm Hexagonal Socket Wrench and set the Arms track tension with the screw located in the long edge.



**MAINT-
ENANCE**



Procedure Objective:



In this section you will find the guidelines for how to configure single or multiple MTGRs simultaneously at the same location. Following the procedures below will ensure the highest efficiency and mission control the MTGR can provide.

BRD2 & MPU3 Configuration

Items Required:

MTGR
MTGR-V2-0000



ROCU-7
ROC7-V2-0000



Spring Antenna
*2



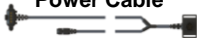
MPU3



ROCU-M-2030-00



ROCU-4000-28
Power Cable

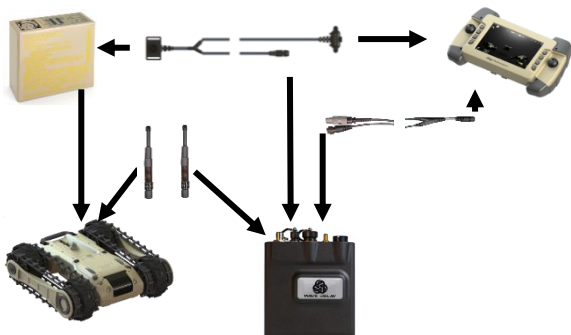


BB-2557(X2)



COMM-
CONF.

Procedure Objective:



NOTE:

- After connecting the MPU3 to the battery, verify the **GREEN LED** is on. If not, HOLD the ON/OFF Button for 3 seconds and release, to turn the MPU3 on.

COMM-
CONF.

PAY ATTENTION! FOR CORRECT SET UP:

- **Ensure** all cables and connections are properly secured (Red O-Ring on Glenair connectors can not be seen)
- Both antennas must be securely fastened and in a vertical position on the MPU3 and MTGR
- MPU should be located as high from the ground as possible (chest level and up)

Log Into Your WR (BRD\MPU) Unit

1. Power ON the unit you wish to manage

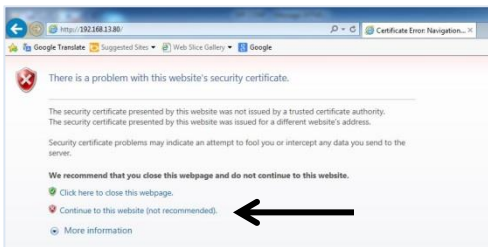
2. If you are connecting to the MPU via ROCU, close the application and open the browser



3. In the address bar, type the IP address of the node

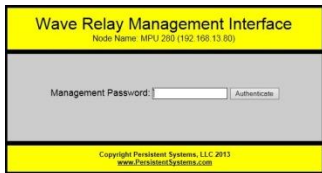


4. The browser will send you to a security page, click on:
"Continue to this web site (not recommended)"



Log Into Your WR (BRD\MPU) Unit

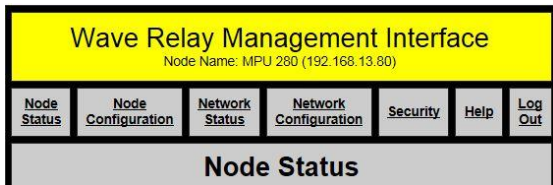
5. On the password page type: “password”



The screenshot shows a web interface with a yellow header bar containing the text "Wave Relay Management Interface" and "Node Name: MPU 280 (192.168.13.80)". Below the header is a grey area with the label "Management Password:" followed by a text input field and an "Authenticate" button. At the bottom is a yellow footer bar with the text "Copyright Persistent Systems, LLC 2013" and "www.persistent-systems.com".

6. After entering the password you will enter the BRD\MPU configuration page

7. Int. The head of the page you will find the main tool bar



The screenshot shows the main menu of the Wave Relay Management Interface. It has a yellow header bar with the title "Wave Relay Management Interface" and "Node Name: MPU 280 (192.168.13.80)". Below the header is a horizontal toolbar with seven buttons: "Node Status", "Node Configuration", "Network Status", "Network Configuration", "Security", "Help", and "Log Out". The "Node Status" button is highlighted. Below the toolbar is a grey bar with the text "Node Status".

COMM-
CONF.

Node Status

1. On the main menu click the “Node Status” tab
2. Click the “Unit Info” button
3. Make sure the unit’s firmware version is: 18.3.1b or above

Wave Relay Manager

Node Name: MPU 280 (

Node StatusNode ConfigurationNetwork Status

Node Information

Firmware Version: 18.3.1b

Serial No.: 00008672

Uptime: 0 days, 00 hours, 57 minutes, 34 seconds

Temperature: 40.8 degrees Celsius

Input Power Voltage: 14.6 volts

Real Time Clock Battery: 3.0 volts

Current System Time: Sun Oct 6 07:52:50 UTC 2013

Management HW MAC Address: 00:18:A6:00:21:E0

Radio 1 HW MAC Address: 00:30:1A:42:0F:79 (2.3 GHz 2W)

Ethernet 1 HW MAC Address: 00:D0:12:E3:EE:8D

Ethernet 2 HW MAC Address: 00:D0:12:E3:EE:8E

Refresh

Copyright Persistent Sys
www.PersistentSys.com

COMM-
CONF.

Chanel Plan

1. On the main menu click the “Network Status” tab
2. Click the “Channel Plan” button
3. On the screen you will see all the nodes that are currently in your operating channel.

Wave Relay Management Interface

Node Name: WR8691 (192.168.6.80)

Node
Status

Node
Configuration

Network
Status

Network
Configuration

Security

Help

Log
Out

Network Channel Plan

Node	Result
WR8691 192.168.6.80	Radio 1 = Radio Channel A Channel 2347/5
MPU 280 192.168.13.80	Radio 1 = Radio Channel A Channel 2347/5

Refresh

Copyright Persistent Systems, LLC 2013
www.PersistentSystems.com

COMM-
CONF.

Bandwidth Test

1. On the main tool bar click the “Node Status” tab
2. Click the “Bandwidth Test” button
3. Make sure **only** two nodes are switched on, and both are in the radios of no more than 6 feet.
4. On the drop-down list choose the node with which you will check the bandwidth (You can’t choose the node you are using) and press: “Run Test”

Network TCP Throughput Testing

Destination:

192.168.7.51 ☐ Upload only test

Test Duration:

5 Seconds

Run Test

**BW
TEST**

Bandwidth Test

5. The test results will be written at the bottom of the page

The screenshot shows the 'Wave Relay Management Interface' for Node Name: MPU 280 (192.168.13.80). It has tabs for Node Status, Node Configuration, Network Status, Network Configuration, Security, Help, and Log Out. The 'Network Status' tab is active, displaying 'Network TCP Throughput Testing'. Under 'Destination', it shows '192.168.6.80 - WR0691' with an 'Upload only test' checkbox. 'Test Duration' is set to '5' seconds. A 'Run Test' button is present. Below, it states 'TCP Throughput test to 192.168.6.80 for 5 seconds'. The results are shown in a table with 'Upload' at 4.26 Mbits/sec and 'Download' at 4.23 Mbits/sec. A copyright notice for Persistent Systems, LLC 2013 is at the bottom.

Upload	Download
4.26 Mbits/sec	4.23 Mbits/sec

6. Check that all of the results are in the range as described in the table below:

MHz checked	Min result (both for upload & download)	Max difference between upload & download
5 MHz	4 Mbits/sec	1 Mbits/sec
10 MHz	8 Mbits/sec	1 Mbits/sec
20 MHz	16 Mbits/sec	1.5 Mbits/sec

7. If the test fails, change the frequency and run test again

**BW
TEST**

Clean List

1. On the main tool bar click the “Network Configuration” tab
2. Click the “Network Node List” button
3. You will see 2 lists: “Management Node List” & “Other nodes on Network”

Management Node List		Manually Add IP(s)																																							
<input type="button" value="Push Management List to Network"/>		<input type="text"/> <input type="button" value="Add"/>																																							
(comma separated list)																																									
<table border="1"><tr><td>Up</td><td>Down</td><td>Remove</td><td>Clear All</td></tr><tr><td colspan="4">Sort</td></tr><tr><td colspan="4">192.168.7.51</td></tr><tr><td colspan="4">192.168.7.81 - Robot 1</td></tr><tr><td colspan="4">192.168.7.84</td></tr></table>		Up	Down	Remove	Clear All	Sort				192.168.7.51				192.168.7.81 - Robot 1				192.168.7.84				<table border="1"><tr><td colspan="3">Other Nodes on Network</td></tr><tr><td colspan="3"><input type="button" value="Refresh"/></td></tr><tr><td colspan="3">Add to Managed Node List</td></tr><tr><td>Selected IPs</td><td>All</td><td>Clear Nodes</td></tr><tr><td colspan="3">192.168.6.80 - WR8691</td></tr><tr><td colspan="3">192.168.13.80 - MPU 280</td></tr></table>		Other Nodes on Network			<input type="button" value="Refresh"/>			Add to Managed Node List			Selected IPs	All	Clear Nodes	192.168.6.80 - WR8691			192.168.13.80 - MPU 280		
Up	Down	Remove	Clear All																																						
Sort																																									
192.168.7.51																																									
192.168.7.81 - Robot 1																																									
192.168.7.84																																									
Other Nodes on Network																																									
<input type="button" value="Refresh"/>																																									
Add to Managed Node List																																									
Selected IPs	All	Clear Nodes																																							
192.168.6.80 - WR8691																																									
192.168.13.80 - MPU 280																																									

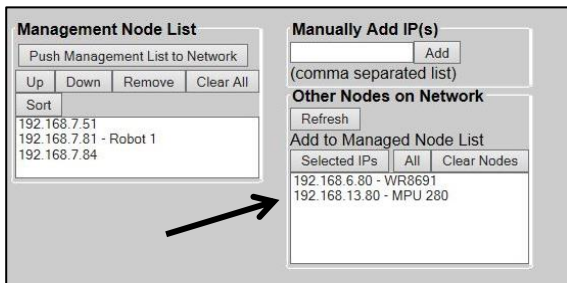
4. In order to clear the lists, click the “Clear All” & “Clear Nodes” button
5. Clicking the: “Refresh” button will find all detected nodes

Management Node List	Manually Add IP(s)									
No Managed Nodes in List	<input type="text"/> <input type="button" value="Add"/>									
	(comma separated list)									
	<table border="1"><tr><td colspan="3">Other Nodes on Network</td></tr><tr><td colspan="3"><input type="button" value="Refresh"/></td></tr><tr><td colspan="3"></td></tr></table>	Other Nodes on Network			<input type="button" value="Refresh"/>					
Other Nodes on Network										
<input type="button" value="Refresh"/>										

CLEAN
CREATE
LIST

Create List

1. Choose the IPs you want to add to the “Management Node List” and click the “Selected IPs” button, Or click the “All” button in order to select all nodes on the list



Management Node List

Push Management List to Network

Up Down Remove Clear All

Sort

192.168.7.51
192.168.7.81 - Robot 1
192.168.7.84

Manually Add IP(s)

Add

(comma separated list)

Other Nodes on Network

Refresh

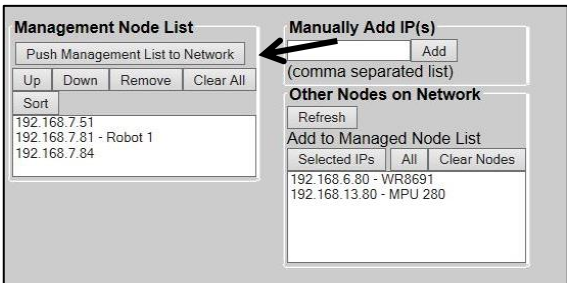
Add to Managed Node List

Selected IPs All Clear Nodes

192.168.6.80 - WR8691
192.168.13.80 - MPU 280

2. Clicking the “Push Management List to Network” will copy the list to all nodes.

Make sure to include the node you are working from



Management Node List

Push Management List to Network

Up Down Remove Clear All

Sort

192.168.7.51
192.168.7.81 - Robot 1
192.168.7.84

Manually Add IP(s)

Add

(comma separated list)

Other Nodes on Network

Refresh

Add to Managed Node List

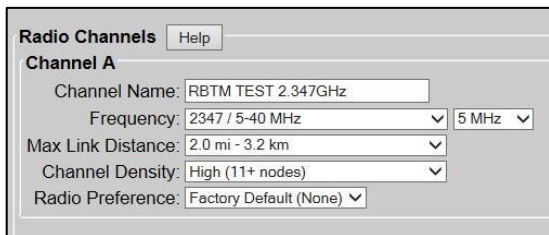
Selected IPs All Clear Nodes

192.168.6.80 - WR8691
192.168.13.80 - MPU 280

CLEAN
CREATE
LIST

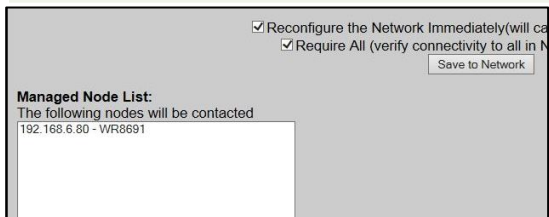
Change Frequency

1. On the main menu click the “Network Configuration” tab
2. Click the “Network Default” button
3. Choose in the drop-down list the requested frequency. It is recommended to change the channel’s name so it will include the new frequency.



The screenshot shows the 'Radio Channels' configuration window. At the top left is the title 'Radio Channels' and a 'Help' button. Below the title is a section for 'Channel A'. It contains five configuration fields, each with a label and a value in a text box or dropdown menu: 'Channel Name' is 'RBTM TEST 2.347GHz', 'Frequency' is '2347 / 5-40 MHz' with a '5 MHz' dropdown to its right, 'Max Link Distance' is '2.0 mi - 3.2 km', 'Channel Density' is 'High (11+ nodes)', and 'Radio Preference' is 'Factory Default (None)'.

4. Choose the: BW, Max Link Distance, Channel Density & Radio Preference according to “BW Table” “Rule of Thumb” tables
5. Make sure the “Managed Node List” contains all of the nodes. If not go to Clean\Create List



The screenshot shows the 'Managed Node List' configuration window. At the top right, there are two checked checkboxes: 'Reconfigure the Network Immediately(will ca)' and 'Require All (verify connectivity to all in N'. Below these is a 'Save to Network' button. The main section is titled 'Managed Node List:' and contains the text 'The following nodes will be contacted'. Below this text is a text box containing the IP address '192.168.6.80 - WR8691'.

CHANGE
FREQ.

Change Frequency

6. Click the “Save to Network” button

7. In order to see all the nodes on your profile, go to “Channel Plan”

BW Table

No of Systems	LOS	Non LOS
1 system –P2P	5 MHz	10 MHz
2 systems	10 MHz	20 MHz
More than 2 systems	20 MHz	

Rule of Thumb Table

The Max Link Distance (longest hop)	The Max distance between two different nodes * 1.5
Channel Density	No Nodes * 2 (make sure to count all nodes ROCUs & MTGRs)
Radio Preference	Factory Default

Default BW is 10 MHz

**CHANGE
FREQ.**

New Profile

1. On the main menu click the “Network Configuration” tab
2. Click the “Network Default” button
3. Choose a channel and name it

Channel B

Channel Name:



Frequency:

5745 / 5-20 MHz - Channel 149



20 MHz



Max Link Distance:

Factory Default (3.0 mi - 4.8 km)



Channel Density:

Factory Default (High (11+ nodes))



Radio Preference:

Factory Default (None)



CHANGE
FREQ.

New Profile

1. Do not change anything else before you change all the requested nodes to the new profile (3 following steps)

- a. On the main menu click the “Node Configuration” tab
- b. Click the “Node Configuration” button
- c. Choose the new profile from the drop-down list

Radio 1 Channel A: RBTM TEST 2.347GHz (2347 / 5 MHz) 2.0 mi - 3.2 km ▼

Radio Name:

Frequency:

Max Link Distance:

Channel Density:

Radio Preference:

802.11 Access Point:

2. Perform “Change Freq.” on the new profile

**CHANGE
FREQ.**



CONTACT

Contact

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DOMINATE THE UNKNOWN

