

Ruijie Networks - Innovation Beyond Networks

RG-MTFI Implementation Cookbook (V1.1)

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1 Preface

Audience

- Network Engineers
- Network Administrator

Obtain Technical Assistance

- Ruijie Networks Websites: <u>http://www.ruijienetworks.com</u>
- Ruijie Service Portal: <u>http://case.ruijienetworks.com</u>

Welcome to report error and give advice in any Ruijie manual to Ruijie Service Portal

Related Documents

• Ruijie Wireless Products Datasheet: <u>http://www.ruijienetworks.com/service/doc.aspx</u>

Revision History

Date	Change contents	Reviser	
2017.10	Initial publication V1.0	Ruiji International TAC	
2018.1	Added WEB UI configuration	Ruiji International TAC	

2 Contents

1	Preface		1-1
2	Contents		2-2
3	Product In	3-3	
	3.1 P	roduct Overview	3-3
4	Quick Star	t	4-4
	4.1 H	ardware Installation	4-4
	4.1.1	Installing the Host	4-5
	4.1.2	Installing the Antenna	4-6
	4.1.3	Installing the Power Cable	4-6
	4.1.4	Power-On and Begin to Use	4-7
	4.2 C	onfiguration	4-9
	4.2.1	Device Configuration	4-9
	4.2.2	MACC Configuration	4-11
5	Features		5-14
	5.1 L	ocal Authentication	5-14
	5.2 V	/eb URL Blocking	5-16
	5.3 R	ate Limit	5-18
	5.4 D	ate Threshold Alarm	5-18
	5.5 F	irmware Upgrade	错误!未定义书签。

3 Product Introduction

3.1 Product Overview

Ruijie RG-MTFi-M520 exclusively offers you an in-vehicle wireless system and entertainment hub - all in one easy-to-use platform. Onboard with simultaneous dual-SIM link aggregation, the RG-MTFi-M520 transforms 3G/4G to wireless connectivity with ease. The device implements the latestLTE solution supporting advanced communication systems such as TD-LTE, FDD-LTE, TD-SCDMA and WCDMA for streamlined LTE applications on the ride. Featuring the leading 2X2 MIMO technology and 802.11ac standard, the RG-MTFi-M520 supports access rates of up to 300Mbps for 2.4GHzand 867Mbps for 5GHz for the best-in-class user experience on the go.

The RG-MTFi-M520 also transforms your automotive Wi-Fi network into a revenue-generating entertainment asset. Just get connected and passengers can enjoy a variety of multimedia resources via the RG-MTFi-M520. The built-in hard disk enables multimedia resource to be stored locally - no extra costs on downloading from the 3G/4G network. The entertainment features attract passengers to use the Wi-Fi service onboard and customized advert push will be delivered when they log in to the network. Multiple users login authentications can be created includes social media accounts, voucher etc. The RG-MTFi-M520 gains you more passenger loyalty and engagement. More passengers, more business revenue.

The RG-MTFi-M520 offers value-added applications including GPS, VPN, power failure alert, real-time clock (RTC) and more. The industrial-grade device supports power supply from the vehicle (9 to 36V DC). All power connectors, internal modules and components are shock and vibration proof. The RG-MTFi-M520 truly delivers stable and high-performance network connectivity on the go.



RG-MTFi-M520

4 Quick Start

4.1 Hardware Installation

Before installation, ensure that:

- Sufficient airflow is available for the device.
- Temperature and humidity requirements for the device are met.
- The power supply is properly deployed and power requirements are met.
- There is sufficient space for installing the device.
- Install RG-MTFi-M520 to a mounting bracket. The following figure shows the installation procedure.



4.1.1 Installing the Host

Installation using a mounting bracket: Install the host in a specified position using the mounting bracket, and fasten the host using M5 screws and nuts, as shown in the following figure.





Caution:

- Before installing the mounting bracket, attach the two rubber dampers in the accessories to the rear of RG-MTFi-M520.
- Match the screws with screw holes, so as to fasten all components.
- Fasten all screws to prevent RG-MTFi-M520 from vibrating or falling off.

Remarks:

- 1. For RG-MTFi-M520 with a single 3G/4G module, insert the SIM card into SIM Card-1 slot with adapter. For RG-MTFi-M520 with dual 3G/4G modules, insert the SIM cards into SIM Card-1 slot and SIM Card-2 slot with adapters.
- 2. To prevent SIM card from missing, fasten the anti-theft panel to the front panel using four M3 hexagon socket-head screws after the SIM card is inserted.
- 3. The following figure shows appearance of the anti-theft panel

Figure 4-2 Anti-theft Panel



4.1.2 Installing the Antenna

Screw the antennas delivered with RG-MTFi-M520 into corresponding antenna connectors on the rear panel, and make sure that the antennas are fastened. The antennas are provided with 3M adhesive, and may be attached near the window.

4.1.3 Installing the Power Cable

Connect the DC aviation plug to RG-MTFi-M520 properly, and fasten the aviation plug by rotating the nut.



Figure 4-3 Connecting the DC Aviation Plug to RG-MTFi-M520

Left: DC aviation plug Right: Aviation plug on RG-MTFi-M520

The following figure shows the power cable of RG-MTFi-M520 with two types of vehicle-mounted connector terminals. Select a connector terminal according to actual requirements, remove the stopple of the terminal, and properly connect the terminal to a matched terminal in the vehicle (VCC/yellow, ACC/red, and GND/black should be correspondingly connected). Do not remove the stopple of the other unused terminals to prevent exposing metal wires.

Figure 4-4 Power Cable of RG-MTFi-M520



Caution:

1. Make sure that output of the power supply and power fall within an available range before the connection, and use the multimeter to check whether the vehicle power supply is 12 V or 24 V and whether the vehicle power cable is properly connected.

2. Adopt the solid state connection mode for the power cable adapter to avoid tension.

3. Conduct cabling management in hidden positions in a neat and artistic way, and apply protective cover over the cables.

4. Improper connection of the ACC may lead to a risk of losing system files.

Adapter (Available for tests only)

Select an adapter with a voltage within the required range. Specific requirements are as follows: Input voltage: $100-240 \vee AC$; input current: $\geq 1 A$ Output voltage: $9-36 \vee DC$; output current: $\geq 2 A$

4.1.4 Power-On and Begin to Use

• Power supply and antenna verification

Check whether the power cable on the rear panel is properly connected. Check whether the antennas are properly connected.

Power-off

Power off RG-MTFi-M520 before maintenance to avoid damage to the SIM card, the hard disk, and the radio frequency (RF) module.

After RG-MTFi-M520 is powered on, if PWR is steady on green, it indicates that RG-MTFi-M520 runs properly. If the indicator 3G/4G starts blinking, it indicates that a 3G/4G network is connected. If the indicator WiFi starts blinking, it indicates that WiFi is enabled.

The following figure shows installation of the power cable and antenna.

Figure 4-5 AP with Single Module and External GPS Antenna



Figure 4-6 Single 3G/4G Module and Six External Antennas



Figure 4-7 Dual 3G/4G Modules and Three External Antennas



Figure 4-8 Dual 3G/4G Modules and Seven External Antennas



For more detals about the device installation, please refer to RG-MTFI-M520 Installation Guide.

4.2 Configuration

4.2.1 Device Configuration

After powering up the device, use default wired connection IP 192.168.1.1:8888 or default wireless connection IP 192.168.0.1:8888 to access the device configuration web page. The default SSID is **MTFi-M**, and default password is **admin-mtfi**.



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After login into the configuration website, you are able to check the device current operating status in the home page. Please check if the SIM cards are dialing up successfully.

\leftrightarrow \ominus \Box	i 172.31.6	1.178:8090/cgi-bin/lucl/stok=bfacb497e3dd5f91ae984327ef88618b/admin/status/overview	☆ 题	А 🖀	:
Ruijie	MTFI	Device Model: RG-MTFI-MS20(RLEFS)		🗗 Exit	
🔒 Home		Home			L
🛞 Network	~	E Device Information Refresh		*	L
🗙 Advanced	~				L
🗱 System	~	21 792 M Free Memory 38 284 M Left HD capacity			l
		DNS Assigned:8.8.8.8.4.4,119.29.29.29,180.76.76.76 Software Version : MTFL_3.0(1)83,Release(04191819) Hardware Versoin:1.00 SN:G1KLA2L000985 Running:5h S8m 26s		-	
		GPS Info Refresh Status:A Free Satellite:15 Used Satellite:9 Longitude:119.232119 Latitude:26.060558 Altitude:29.8 Speed:0.03			l
		≡ SIM card 1 Info			L
		Dialling is successful:up Carrier:China Unicom Mode:4G Signal:-69 Ip:10.21.170.119 IMSI/460013822016289 IMEI:862808030038270 ICCID:89860116838018314844 Module:U9300C Interface Name:ppp1 USB Interface Information:3-1 Collapse Refresh			
		Flow trend		•	
		Copyright©2000-2016 Ruijie Networks Co., Ltd. All Rights Reserved Official Website Online Service Service Portal Co	ommunity Se	rvice Mail	•

If the SIM cards keep dialing up failed, please check if the SIM card data service can work normally in a cell phone or if all the necessary antennas are connected properly with the device. If still have issue please check whether the related SIM APN information is in the device built-in APN list or if the information is accurate by following steps:

Ruíjie MTF	I	Device Mod	del: RG-MTFI-M520(ALIF)			ÐÞ
🕈 Home	~	APN	SIM Work Mode			
Network	^					
		A	APN List + add apn			
			APN	MCC	MNC	Action
SIM			China Unicom	460	1,6	Edit
			China Telecom	460	3,5,11,99	Edit
K Advanced	~		slot2	460	0,2,7,8,4	Edit
🛱 System	~		slot1	460	0,2,7,8,4	Edit
			China Mobile	460	0.2.7.8.4	Edit
			russ_mobile	250	0,2,7,8,4	Edit Delete
			Show No.: 10 V Total Count:6			If First ∮ Pre 1 Next ▶ Last № 1 GO
					Copyright©200	0-2016 Ruijie Networks Co., Ltd. All Rights Reserved Tel : 4008 111

Step 1 Login into the device configuration page and navigate to Network >SIM > APN.

Step 2 Please check if the inserted SIM cards carriers' APN information records already exist in the list. If yes, please click 'Edit to check if the default built-in information such as APN, username, password, MCC, MNC etc. is accurate. Modify any if necessary. If there is no record in the list, please click Add APN to create a new APN record for your SIM cards.

Step 3 After any modification or adding a new record, please reboot the device to make the related changes effective. Usually after you input the accurate APN information and reboot the device, the SIM cards should dial up successfully.

- Besides the SIM APN configuration, you are also able to configure the network interfaces, wireless network etc. at Network section, configure speed limit per user, ACL, static routing etc. at Advanced section, and configure system time, password, upgrade etc. at System section.
- You are also able to configure the ACS URL at Advanced > CWMP to make your device manageable via a cloud AC platform. The ACS URL is directed to Ruijie public cloud AC platform, MACC-BASE, which is "http://cloud.ruijienetworks.com/service/tr069servlet" by default.

CWMP	
ACS URL	http://120.35.11.139:81/service/tr0
Periodic Inform Interval	180
	seconds, Range:(Min:30 seconds, Max:3600 seconds)
	Save & Apply

4.2.2 MACC Configuration

1. Choose "CONFIGURATION->Groups" on MACC, then click Add Group to create a group.



2. Fill in the basic info for this group, choose 'Transportation' and click Next.

	MONITORING CONFIGU	JRATION MAINTENANCE	+ Add G	roup ——— + Add	Asset ───→ Finish ×
 GROUP Groups Group Config RADIO AP Layout RF Planning Roaming Load Balance OTHERS BlueTooth 	Add Group ChaoMTI Device: 3 test Device: 0 MTFL_Sh Device: 1 balance. Device: 1	Name your group (GMT+8:00)PRC General Transportation Image: Constraint of the second s	• Add G	roup + Add Group Basic Inf Group Name Time Zone Scenario SSID	Asset + Finish X formation (GMT+8:00)PRC Transportation
	ycy Device : 3		Cancel Next		

3. Create SSID for this group if needed, and click **Save&Next**.

Add Group				+ Add Group	→ Add Device → Finish ×	
WiFi Settings				Group Basic Information		
SSID :	Beijing_Ruijie		۵.	Group Name	Beijing_Ruijie	
Password :	Open WPA-PSK			Time Zone	(GMT+8:00)PRC	
Expandiss				Scenario	General	
				Location	Bound	
Add WiFi				SSID	Beijing_Ruijie	
Back		Cancel	e & Next			

4. Add bus assets, SIM card information, AP into this group if necessary, and click Save&Next.

Add Asset	Add Group	→Add Asset → Finish ×
Batch Import (AP)	Equipmen	t has been added
Download and fill in the template.	Bus Asset	s 0
	SIM Card	0
Φ	AP	0
	<u>View Detail</u>	<u>8</u>
'.xls' File download template		
Back Add Manually Cancel	Next	

5. Click Save&Next to finish the process. And follow the same steps as above to create sub-group.



6. Choose "Monitoring->Devices->Access Points->Add" to add the device's SN

Ruijie	MONITORING CONFIGURATION MAINTENANCE	e 🕑 🌣 🎦
OVERVIEW	all v — Tac_MTFI v	demo_1 × 🔻
Global Quality	MTFI List	-⊖ ௴ # - ♡
DEVICES Access Point	Status SN Group Bus Company Bus Line Vehicle IDClient MAC Model Online G1LL62G000015 TAC_MTFI testCompany testBusline 1 0074.9c14.318b RG-MTFI-M520(ILEAA)	Firmware Version MTFI_3.0(1)B3,Release(04191819)
Switch	First Previous Page 1 of 1 Next Last	10 - 1 in total Add Batch Import More -
Client List Experience	SIM Card List	\vee
	Bus List	~

7. The status will be "online" after you successfully adding the Device.

	MONITORING CONFIGURATION MAINTENANCE	8
 OVERVIEW Global Quality Alarm 	ALL ~ - TAC_MTFI ~ MTFI List SN Q Search	
 DEVICES Access Point 	Status SN Group Bus Company Bus Line Vehicle ID Client MAC Model Firmware Version Image: I	14
Switch	First Previous Page 1 of 1 Next Last 0 Selected Add Batch Import More *)
Experience	SIM Card List	e
	Bus List	

5 Features

5.1 Radio Setting

Choose $CONFIGURATION \rightarrow RF PLANING$ to set the MTFI's Radio.

MONITORING	CONFIGURATIO	N MAINTENANO	E
TAC_MTFI ~			
Radio Settings			
Country :	Malay	sia(MY) •	
Default 2.4G Bandwidth	20MH	z 🔹	
Default 5G Bandwidth :	20MH	z 🔻	
Save			
Jave			
		-	Section 200
			-
	MONITORING TAC_MTFI ✓ Radio Settings Country : Default 2.4G Bandwidth Default 5G Bandwidth : Save	MONITORING CONFIGURATION TAC_MTFI ✓ Image: Country : Malay Default 2.4G Bandwidth : 20MH Default 5G Bandwidth : 20MH Save Save	MONITORING CONFIGURATION MAINTENANC TAC_MTFI ~ <

5.2 Local Authentication

The Local Authentication function is enabled by default. After the STA connecting to the SSID, the following authentication page will pop up:



Users need to click the "Click here to Free Internet access" button to get access to the Internet.

We may use the command "*client-auth-conf --show-auth-mode*" to check if local authentication is enable; if not, we could use the command "*client-auth-conf --auth-mode on*" to turn it on.

		. a a a
	ALL V — TAC_MTFI V demo_1	x v
Global Quality Alarm DEVICES Access Point Switch CLIENTS Client List Experience	MTFL List MTFL List MTFL SN SN Group Bus Company Bus Line Vehicle IDClient MAC Model Firmware Version O Online GILL620000015 TAC_MTFL SIM First Previous Page 1 of1 Next Last SIM Card List Bus List	œ ₽ №
C OVERVIEW Global Quality	MONITORING CONFIGURATION MAINTENANCE Web Cli × SN G1LL626000015 Background colors General > Web Cli Please select the target operation on the left	• 2 5 5
Alarm DEVICES Access Point Switch CLIENTS Client List Experience	Connecti > client auth-confshow-auth-mode auth-mode: local User > Web Cli >	Last Seen Cor 2017-09-50 19 04 00 SYr 10 + 1 in total Batch Import More +
	Command: Send	~

Correspondingly, we may use the command "client-auth-conf --auth-mode off" to turn it off.

5.3 Web URL Blocking

- 1. URL blocking will take effect only if the local authentication or social media authentication is enabled.
- 2. Add blacklist on the group config page

Ruíjie	MONITORING	CONFIGURATION M	AINTENANCE			A	🔮 🗘 🕲 🕯
GROUP	TAC_MTFI V					demo_1	××
Groups Group Config	TAC_MTFI					Copy from	Other Group Apply
	Wireless Configurat	ion					^
OTHERS	SSID 🕒	COID	Frankti	- Mode	Index	D- #-	A - M
BlueTooth	1	TAC_MTFI	wpa2	-psk	No	1,2	
and the second second		First Previous	Page 1 c	f1 Next	Last		10 - 1 in total
	Advanced Settings(Log Server URL CWMP Keepalive Int Keepalive Interval(seco	(Optional) Internal URL Internal URL Internal IND Internal IND	Custor	n			^
	Whitelist O			Blacklist 🛛			
	Address	Description	Action		Address	Description	Action
		No matching records found		cloud.ruijienetwork	ks.com		
	Previou	is Page 0 of 0	Next	www.google.com			
				www.cnbeta.com			
				www.youtube.com	n		
				F	Previous Page	1 of 2	Next

3. After adding the Blcaklist, users won't be able to access the related websites.

5.4 SIM Load balance

We can plug in two SIM card and we can set up the mode of these two cards, one mode is Active/Standby and the other mode is Load Balance mode.

i		MONITORING C	CONFIGURATION	MAINTENANCE				0	8 8
ቆ	GROUPS	LevyMTFI 🗸					Time Zone: (GMT+	3:00)PRC demo_1	× •
٩	WIRELESS Basic Layout Load Balance	LevyMTFI						Copy from Other Group	Save
	RF Planning Roaming BlueTooth	SSID Note: The information of single	client rate limit and auth mode in	LevyMTFI (wlan_id : 1) • will	be applied to rate limit & auth mod	de in MTFi device.			
		WLAN ID	LevyMTFI	c	ppen	No	Radio 1,2	Action	
		Advanced Cattings/Option	and l	First Previous Pag	ge 1 of 1	Next		10 -	1 in total
		Advanced Settings(Option SIM Mode Dual 4G SIM RSSI Difference: Dual 3G SIM RSSI Difference: Log Server URL	nai) • Ac : : : : : : : : : : : : : : : :	ctive/Standby Mode Load Balar 15 dbm (Default: 15dbm; Recommender 30 dbm (Default: 30dbm; Recommender ternal URL Custom	nce Mode d: 10dbm -50dbm) d: 10dbm -50dbm)				^
		Whitelist O			Blacklist O				

5.5 Rate Limit

The download speed rate of MTFI is limited at 50KBps by default, and you can configure the speed through EWeb interface.

Ruíji		Template	NIPSAUR ANIAN AND PERMANAN			×	6 @ \$
க் GROUI	IPS Lev	WLAN ID	[1 · · ·	Hidden	No	*	:: (GMT+8.00)PRC demo_1 * *
& WIREL Basic	LESS	SSID Radio	LevyMTFI S Radio1 Radio2	Encryption Mode	OPEN	•	Copy from Other Group Save
Layout Load Ba RF Plan	alance St	Rate limit per Client	On Va	la Dougliok		KB/o	^
Roamin BlueToo	ng oth	Rate limit per SSID	☑ On	/s Dominink		KD/S	Action
		Uplink	E on Ke	l/s Downlink		KB/s	C a
			O	Cancel			10 + 1 in total
		Advanced Settings(Optiona	l)				~

5.6 Date Threshold Alarm

We can set a Data Threshold for a SIM card. An alarm will be triggered when the data usage hit the threshold.

1. Add SIM cards on devices list and set data threshold (SIM info could be found on the homepage of MTFi web management page)



2. Enable the alarm setting

	MAINTENANCE		B 🕑 🖉 🖉 🖉
TAC_MTFI V			Alarm Setting Contact
Alarm Settings			0 X
Туре	Status	Alarm Threshold	Send Alarm Over Email
Device goes offline			
Device goes online and offline continually		> 20 % 📀	
STUN change continually		> 3 times/h 🕑	
SIM card traffic exceeds limit		> 90 % 📀	
GPS signal is not found			\bigcirc
CPU usage is high		> 90 % 📀	
Memory usage is high		> 90 % 🕑	
Disk space usage is high		> 90 % 📀	
Flash usage is high		> 90 % 🕑	\bigcirc
CPU temperature is high		> 60 🛇	

6 Maintaince

6.1 Firmware Upgrade

Choose "MAINTENANCE→UPGRADE→Firmware→ Upload Firmware" to upload the MTFi's firmware to MACC

	MONITORING CONFIGURATI	ON MAINTENANCE		🔊 😋 😉	8
 REPORT Network Overview 	Firmware List			⊖ #-	×
Activity Analysis	Firmware Version	Filename	Filesize(MB)	Supported	
Device Analysis	MTFI_3.0(1)B3,Release(04191819)	MTFI_3.0_1_B3_MTFI-M520-OverseaUniversal_04191819.tar.gz	27.31	AP720-I-1 00 AP720-I-1 01 AP720-I-1 02	201
	AP_RGOS 11.1(5)B9P2	AP_RG0S11.1_5_B9P2_S1C2-12-FULL_install.bin	30.63	AP720-I-1 00 AP720-I-1 01 AP720-I-1 02	201
Config Log	RG0S 10.4(2B17)-SP2	AP_RG0S11.1_5_B9P2_S1C2-12-C_04170305_install.bin	30.39	AP720-I-1 00 AP720-I-1 01 AP720-I-1 02	201
Lingrade Log	AP_RGUS 11.1(5)B9P2, Release(04170305)	AP_RG0S11.1_5_B9P2_S1C2-12_04170305_Install.bin	30.39		201
Connection Log	First	Previous Page 1 of 1 Next	Last	10 🔺 4 in 1	total
Operation Log				0 Selected Upload Firmware Del	ete
Upgrade					
Firmware					

2. Choose "MAINTENANCE -> UPGRADE -> Upgrade" and select a device to upgrade the firmware.

Ruíjie	MONITORING	CONFIGURATION	MAINTENANC	E	and the second second	e 🕲 🛱 🕯
 REPORT Network Overview Activity Analysis Device Analysis LOGS Config Log Upgrade Log Connection Log Operation Log UPGRADE 	ALL ~ _ TAC_MTFI ~		7FI_3.0(1)83,Re	Firmware Version Firmware Version MTFL_3.0(1)B3,Relea	n List Firmware Version se(04191819)	X V QSearch 1
Upgrade Firmware	Device List Firmware Version Status Online	SN, Description Group TAC_MTFI G1	QSearch SN LL62C000015 F	Model IG-MTFI-M520(ILEAA)	Firmware Version MTFI_3.0(1)B3,Release(04191819)	⊕ ■ ▼ S Description
		First	revious Page 1	of 1 Next	1 Selected	10 🔺 1 in total

6.2 Local Content Update

Some models of MTFi supports using USB flash to update local content. The USB flash should be formatted into FAT, NTFS or EXT file system. USB flash drive can contain multiple partitions, while the updating process only scans the first partition.

Updating Steps:

1. Create or obtain from Ruijie for 'web' folder, which content are MTFi local media resource. Copy this 'web' folder into the root directory of the USB flash drive.

- 2. Create a file named 'web.conf' in the USB flash drive first partition root directory, input the local media resource file folder name in web.conf, which is 'web' in this example.
- 3. Save all files, input USB flash drive into MTFi, starts updating. The updating is finished after the system LED stop flashing quickly.