

4G and Wi-Fi Router A 1753 Instruction manual Bedienungsanleitung Version 2.1.2 Code No. 20 753 169



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English

1	Intr	oduction	.4
2	Ren	note Communication over 2G/3G/4G network	5
_	2.1	Router connection	.5
	2.2	Router Setup	.8
	2.3	Setup overview	15
	2.3.	1 Network → Mobile1	15
	2.4	Connection status1	16
3	Ren	note Communication over Wi-Fi network	18
	3.1	Router connection1	18
	3.2	Router Setup1	19
	3.3	Network overview	23
	3.3.	1 Status → Network2	23
4	Firn	nware upgrade	26
5	WΔ	N port configuration as LAN	າຍ
J		N POLL CONTIGULATION AS LAN	20
5 6	Tec	hnical Specifications	20 29
5 6	Tec 6.1	hnical Specifications	29
6	Tec 6.1 6.2	hnical Specifications	29 29 29
6	Tec 6.1 6.2 6.3	hnical Specifications	29 29 29 29 29
6	Tec 6.1 6.2 6.3 6.4	hnical Specifications	29 29 29 29 29 30
6	Tec 6.1 6.2 6.3 6.4 6.5	hnical Specifications	29 29 29 29 30 30 30
6	Tec 6.1 6.2 6.3 6.4 6.5 6.6	hnical Specifications 2 General specification 2 Mobile 2 Wireless 2 Ethernet 3 Network 3 Security 3	29 29 29 29 30
6	Tec 6.1 6.2 6.3 6.4 6.5 6.6	hnical Specifications	29 29 29 30 30 30
5 6 D	Tec 6.1 6.2 6.3 6.4 6.5 6.6 eutsch	hnical Specifications	29 29 29 29 30 30 30
5 6 D 7	Tec 6.1 6.2 6.3 6.4 6.5 6.6 eutsch Ein	hnical Specifications	29 29 29 29 30 30 30 31
5 6 D 7 8	Tec 6.1 6.2 6.3 6.4 6.5 6.6 eutsch Eint Fer	hnical Specifications General specification Mobile Wireless Ethernet Network Security	 29 29 29 30 30 30 31 32
5 6 D 7 8	Tec 6.1 6.2 6.3 6.4 6.5 6.6 eutsch Eint 8.1	hnical Specifications General specification Mobile Wireless Ethernet Network Security	 29 29 29 29 30 30 30 31 32 32
5 6 D 7 8	Tec 6.1 6.2 6.3 6.4 6.5 6.6 eutsch Eint 8.1 8.2	hnical Specifications General specification Mobile Wireless Ethernet Network Security	29 29 29 29 30 30 30 31 32 32 35

•		· · · · · · · · · · · · · · · · · · ·	•••
8	Fer	nkommunikation über 2G/3G/4G-Netzwerk	.32
	8.1	Router Verbindung	.32
	8.2	Router einrichten	35
	8.3	Einrichtung - Überblick	44
	8.3.	1 Netzwerk → Mobilgerät	.44
	8.4	Verbindungsstatus	45
9	Ren	note-Kommunikation über Wi-Fi-Netzwerk	47
	9.1	Router-Verbindung	47
	9.2	Router einrichten	48
	9.3	Netzwerk - Übersicht	52
	9.3.	1 Status -> Netzwerk	.52
4	Firn	nware-Upgrade	55
5	Kor	figuration des WAN-Ports als LAN	57
6	Тес	hnische Daten	58
	6.1	Allgemeine Angaben	58
	6.2	Mobil	58
	6.3	Drahtlos	58
	6.4	Ethernet	59
	6.5	Netzwerk	59
	6.6	Sicherheit	59

1 Introduction

Metrel instruments (MI 2893 Power Master XT, MI 2892 Power Master, MI 2885 Master Q4) can be remotely accessed through instrument's Ethernet communication port.

However, on measurement locations where 4G/3G/2G mobile or Wi-Fi communication is available, this router can be used to establish Communication Bridge to the instrument. 4G and Wi-Fi Router A 1753, is a high-speed Wi-Fi and 4G gateway, for remote access to the measurements, certified and tested by Metrel. In this manual MI 2892 Power Master is used as example, however other Metrel Power Quality instruments with Ethernet port are used in similar way. Two configurations are supported and described:

- Instrument remote communication over 2G/3G/4G network
- Instrument remote communication over Wi-Fi network

For other means of connections and configuration please check RUT 240 instruction manual, provided by OEM manufacturer Teltonika <u>www.teltonika.lt</u>.

Standard set include:

- Router RUT240
- Euro PSU
- 2 x LTE antennas (swivel, SMA male)
- 1 x WiFi antenna (swivel, RP-SMA male)
- Ethernet cable (1.5 m)
- Installation Manual 20 753 169



Figure 1: Modem RUT240 Standard set

2 Remote Communication over 2G/3G/4G network

2.1 Router connection

After you unpack box, follow the steps, documented below, in order to properly setup and router connection.

1. Pull out SIM holder by pushing the needle (1) and insert SIM card which has given by your ISP (Internet Service Provider). Insert SIM card into holder (3) and put it back into the modem (4) Correct SIM card orientation is shown in the figure below.



- 1. Push the SIM holder button with the SIM needle
- 2. Pull out the SIM holder
- 3. Insert yout SIM card into the SIM holder
- 4. Slide the SIM holder back into the router
- 5. Attach Mobile and WiFi antennas

Figure 2: SIM card insertion

- 2. Attach Mobile (LTE (2x)) and Wi-Fi antennas.
- 3. Connect the power adapter to the socket on the front of the device. Then plug the other end of the power adapter into the power socket.
- 4. Connect devices, as shown on figure below
 - Router can be set up over Wi-Fi network, by finding RUT240_*** SSID access point on PC. In that case Ethernet connection with PC is not needed.
 - Alternatively, use **Ethernet cable** to connect Router with PC.
- 5. After successful router setup, connect router (LAN port) and PQ instrument by using Ethernet cable. PQ instrument should be properly programmed.

1:57				
INTERNET (3G/GPRS)				
GPS				
0000				
NO				
1E:35:B7:15:01:00				
MI2892_18200373				
192.168.1.214 / 18200373				

Figure 3: PQ instrument communication setup for connection to 4G router



Figure 4: Router 4G connection

6. Power up the router, PQ instrument and PC.

On following figures description of router front and back plates can be found.



Figure 5: Router front plate and Power socket pinout



Figure 6: Router back plate

2.2 Router Setup

Before first use, router should be setup in order to work with LTE network.

- 1. Connect to the router via:
 - a. Through **Wi-Fi**, look up for SSID Access Point **RUT240**_***** (unique for each device) on your computer, and connect to it. SSID and password are provided on the router information label.



Figure 7: SSID and Password information label



b. Through LAN (Ethernet) network, plug Ethernet cable into computer and LAN Ethernet port on Router (marked as "LAN").

Router is automatically recognized (IP address obtained automatically)



	Ethernet Properties ×	
Ethernet Status >	Networking Authentication Sharing Connect using:	Internet Protocol Version 4 (TCP/IPv4) Properties ×
General Connection IPv4 Connectivity: Internet IPv6 Connectivity: No network access Media State: Enabled		General Alternative Configuration You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Duration: 00:12:33 Speed: 100.0 Mbps Details	Image: Strate Scheduler Image: Scheduler <	IP address: Subnet mask: Default gateway:
Sent — Received Bytes: 2.938.397 4.358.170	Install Uninstall Properties Description Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.	Use the following DNS server addresses: Preferred DNS server: Alternative DNS server: Validate settings upon exit Advanced
Close	OK Cancel	OK Cancel

2. Launch your browser and enter the router IP into the address field:

4		192.168.1.1
---	--	-------------

3. If connection is successful, a login screen will appear:

Authorization Required

Please enter your username and password.							
Username	admin						
Password							
	Login						

Enter the default password **admin01** into the Password field and then click on Login button.

Note: After you login first time, you will be prompted to change your password for security reasons. The new password must contain at least 8 characters, including at least one uppercase letter, one lowercase letter and one digit. This step is mandatory and you will not be able to interact with the router's WebUI before you change the password.

Profile in use: default		FW ver.: RUT2XX_R_00.01.12.3	ł						
Change password									
You must change password to leave this page! Passw	ord requirements: Minimum	8 characters, at least one uppercase letter, one lowercase letter and one number.							
Administrator Password									
New password	Teltonika01	ø							
Confirm new password	Teltonika01	ø							
		Save							

4. A Setup wizard will start in order to setup router. Change:

Time Zone Settings									
Profile in use: default						FW ver.: RUT2XX_R_00.01.12.3			
Step 1 - General	Step 2 - Mobile	Step 3 - LAN	Step 4 - WiFi	Step 5 - RMS					
Step - Genera	I.								
Please select your time	ezone.								
Time Zone Settin	gs								
	Current syste	em time 2020-11-	23 12:28:01			Sync with browser			
	Tin	ne zone Europe	/Ljubljana	~					
Skip Wizard						Next			

• Set up **mobile network parameters** (APN, Authentication method, username, password,) according to the mobile provider specification.

Step 1 - General	Step 2 - Mobile	Step 3 - LAN	Step 4 - WiFi	Step 5 - RMS		

Mobile Configuration

Next, let's configure your mobile settings so you can start using internet right away.

obile Configuration		
Auto APN		
APN	custom 🗸]
Custom APN	internet	
Authentication method	PAP 🗸]
Username	mobitel	
Password		ø
PIN number		
Dialing number	*99#	
MTU	1500	
Service mode	Automatic 🖌	
	-	

5. Change LAN setup if necessary, otherwise leave it as is.

Profile in use: default							FW ver.: RUT2XX_R_00.01.12.3
Step 1 - General	Step 2 - Mobile	Step 3	3 - LAN	Step 4 - WiFi	Step 5 - RMS	s	
Step - LAN							
Here we will setup the	basic settings of a typ	ical LAN	configurat	ion. The wizard wi	Il cover 2 basic c	onfig	igurations: static IP address LAN and DHCP client.
General configur	ation						
	IP	address	192.168	1.1			
	Ν	letmask	255.255.	255.0			
	IPv6 Prefix	Length	60				
ULA Prefix							
	UL	A Prefix					
	DHCPv	6 server	Enabled	· •			
	R	A server	Enabled	· ~			
	ND	P server	Enabled	· •			
	Enable	e DHCP	✓				
		Start	100				
		Limit	150				
	Lea	ase time	12		Hours 🗸		
	Start IP a	address:	192.168.1	1.100			
	End IP a	address:	192.168.1	1.250			
Skip Wizard							Next

6. Set up **wireless network** if necessary, otherwise leave it as is. Don't forget to protect it with password and encryption.

Step 1 - General	Step 2 - Mobile	Step 3 - LAN	Step 4 - WiFi	Step 5 - RMS	i
Step - Wireles	s				
Now let's configure you be dropped and you wi	ur wireless radio. (Not ill have to reconnect v	e: if you are curren vith a new set of pa	tly connecting via v rameters.)	vireless and you	change parameters, like SSID, encryption, etc. your connection will
WiFi Configuratio	on				
	Enable	wireless 🔽			
		SSID RUT240	_F674		
		Mode 802.11g	j+n ∽		
		Channel Auto	~		
	En	wPA2-I	PSK	~	
		Cipher Force T	KIP and CCMP (A	ES) 🛩	
		Key z0NKw1	6P	ø	
	Count	try Code 00 - Wo	orld	~	
Skip Wizard					Next

7. Press **Save** button. Router will now apply new settings and restart.

-

-

8. Select **WAN interface** as **Mobile** interface as gateway to the system.

pe	ration Mode						
	Main WAN	WAN Failover	Interface Name	Protocol	IP Address	Sort	
ž0	۲		Mobile (WAN)	None	100.80.18.123		Edit
lle-	0		WiFi (WAN3)	DHCP	-	••	Edit
			Wired (WAN2)	DHCP		••	Edit

9. Press Status \rightarrow Overview button to check the all-interface statuses

Overview

System 💵 🖻		31.8% CPU load	Mobile 🖪 🖸		-73 dBm 🚛
Router uptime	0d 13h 37m 19s(sinci	e 2020-12-16, 20:25:49)	Data connection	0d 0h 2m 25s(since 2	2020-12-17, 10:00:43)
Local device time	2020-12-17, 10:03:08		State	registered (home); M	OBITEL; GSM
Memory usage	RAM: 50% used	FLASH: 20% used	SIM card status	SIM (Ready)	
Firmware version	RUT2XX_R_00.01.12	2.3	Bytes received/sent *	4.2 MB / 3.9 MB	
Wireless 🖬 🖸		ON 📚	WAN 🖬 🖸		Mobile 🕼
SSID	B RUT240_F674 (AF	")	IP address	100.80.18.123	Public IP address
Mode	1- AP; 11 CH (2.462 (GHz)	WAN failover status	Failover link is disable	ed
Local Network	٥		Remote Manageme	ent System 🛙 🖾	ON 🕢
IP / netmask	192.168.1.1 / 255.25	5.255.0	Status	Standby	
DHCP Leases	1		Connection State	Error: Device is not re login to rms.teltonika. account device list.	egistered in RMS. Please It and add this device to your

10. Connection check and further steps

Assure that your PC is accessing to the internet only by A 1753 4G and Wi-Fi Router (disconnect other communication channels) and try to access <u>www.google.com</u> with your browser. If success, router is ready for use with the instrument.

If internet connection over A 1753 4G and Wi-Fi Router is not established:

- Verify hardware connections (SIM card, supply, patch cables, antennas,)
- Check if PIN number is entered properly under setup or it should be disabled.
- Reset Router and repeat setup procedure.
- Check if 4G or Wi-Fi signal is present.
- Contact Metrel support for assistance.

Instrument should be now set up in the same manner as described in user manual under section: "Remote instrument connection (over Internet)". Please check this section in manual and follow described connection procedure.

11.Connect instrument and modem with Ethernet cable. Use Ethernet port marked as "LAN" on the Router.



Figure 8: Router and MI 2892 connection

2.3 Setup overview

2.3.1 Network → Mobile

Mobile Configuration

Mobile Configuration	
SIM 1	
Connection type	QMI 🗸
Mode	NAT 🗸
Auto APN	
APN	custom 🗸
Custom APN in	internet
Authentication method	PAP 🗸
Username	mobitel
Password •	•••••••••
PIN number	
PUK code	
Dialing number *	*99#
MTU 1	1500
Service mode	Automatic 🗸
Deny data roaming	
Mobile Data On Demand	
Enable	
No data timeout (sec) 1	10
Network Frequency Bands	
This is band selector option. You can't force specific ban are unchecked any band will be used.	nd usage, you could choose it if module detects more than one band on selected network service. If all bands
SIM 1	
Connection method	Automatic 🗸
Force LTE network	
Enable 🗸	2
Reregister	
Interval (sec) 3	300
	Save

2.4 Connection status

Modem connection status can be observed under Status -> Network information menu.

Note: connection to router via WiFi access!

Mobile	WAN	LAN	Wireless	OpenVPN	VRRP	Access
Mobile	Inform	nation				
Mobile	.dl					
Data conn	ection stat	te		Conr	nected	
IMEI				8604	25046860	118
IMSI				2934	111002061	38
ICCID				8938	641010412	2061381F
Sim card s	state			Read	ły	
Signal stre	ength			-81 c	IBm	
Cell ID				4471		
Operator				MOE	ITEL	
Operator s	state			Regi	stered (hor	ne)
Connectio	n type			2G (GSM)	
Connected	d band			CDN	IA BC0	
Bytes rece	eived *			5.8 N	AB (610860	2 bytes)
Bytes sent	t*			5.4 N	AB (566320	0 bytes)

Reboot modem C Restart connection C (Re)register C

Refresh C

Mobile WAN	ΙΔΝ	Wireless	OpenVPN	VRRP	Access				
	Lan	Mileicos	opentri	TRIC	A00033				
WAN Informa	ation								
WAN									
Interface			Mob	oile					
Туре			QM	l					
IP address			100	.66.240.27					
Netmask			255	.255.255.24	8				
Gateway			100	.66.240.28					
DNS 1			193	.189.160.13					
DNS 2			95.1	76.233.13					
Connected			0h 1	m 10s					
Ports									
				_			-		
				*			K		
				POWER	•	LAN V	• VAN		
WAN Failover S	tatus								
				WA	N failover li	nk is disabled			
									Refresh C
Mobile WAN	LAN	Wireless	OpenVPN	VRRP	Access				
LAN Informa	tion								
LAN Information	n								
Name	IP	address	IPv	6 address(e	es)	Netmask		Ethernet MAC address	Connected for
Lan	19	92.168.1.1	-			255.255.255.0		00:1E:42:2F:F6:72	13h 51m 37s
DHCP Leases									
Hostname		IP address		LAN	l name		MAC add	dress	Lease time remaining
mhribar		192.168.1.1	112	Lan			74:E5:F9	:09:12:5D	11h 58m 38s
?		192.168.1.2	246	Lan			38:AF:D7	7:AF:58:CB	11h 54m 3s
MI2892_18200373		192.168.1.2	214	Lan			1E:35:B7	:15:01:00	11h 57m 24s
Ports									





3 Remote Communication over Wi-Fi network

3.1 Router connection

After you unpack the box, follow the steps, documented below, in order to properly connect the router.

- 1. Attach Wi-Fi antenna.
- 2. Power up router, instrument and PC
- 3. Connect devices, as shown on figure below
 - a. Use Ethernet cable to connect Router with PC (use LAN port).
 - b. Setup the Router



Figure 9: Router Wi-Fi connection

3.2 Router Setup

- 1. To connect to the router through LAN (Ethernet) network, plug Ethernet cable into computer and into LAN Ethernet port (marked as "LAN" on the router).
- 2. Launch your browser and enter the routers IP into the address field:

6	\square	192.168.1.1
	hand	TOCITOOLTIT

3. If connection was successful, a login screen will appear:

Authoriz	ation Required
Please enter y	our username and password.
Username	admin
Password	

Login

Enter your own password (default one: **admin01)** into the Password field and then click on Login button.

- 4. Note: After you login first time, you will be prompted to change your password for security reasons. The new password must contain at least 8 characters, including at least one uppercase letter, one lowercase letter and one digit. This step is mandatory and you will not be able to interact with the router's WebUI before you change the password.
- 5. Basic router setup was done under item <u>2.2</u> Router setup. Manual here will cover only WiFi network selection for data transfer and WAN port selection.
 - a) In **Network→ WAN** menu select Wifi option (gateway to the system). Press Save Button, and wait that router reconfigure operation mode. WAN

	Main WAN	WAN Failover	Interface Name	Protocol	IP Address	Sort	
620	0		Mobile (WAN)	None	100.81.133.200		Edit
(lı-	۲		WiFi (WAN3)	DHCP	-	••	Edit
S.	0		Wired (WAN2)	DHCP		••	Edit

WA	N							tile has been undated 11
Your	WAN configurati	ion determines how the router	will be connecting to th	e internet.			110	ne nas been apoated.
Ор	eration Mode	•						
	Main WAN	WAN Failover	Interface Name	Protocol	IP Address	Sort		
((:-	۲		WiFi (WAN)	DHCP	*		Edit	Scan
12			Wired (WAN2)	DHCP	-	••	Edit	
630			Mobile (WAN3)	None	100.81.133.200	••	Edit	
rofile	C) So	elect appropria	te WiFi net	work and	d press Joi	in Ne	twork.	Save
7% (default1	ode: Master BSSID: 74:DA		tion: WPA2 P	SK (CCMP)			Join Networ
	AndroidAP5	5FD	1.30.00.DF.00 Eliciy		SK (COMP)			Join Networ
								Repeat scan
rofile	d) If bu e in use: defaut n Network	necessary, pro utton afterward	ovide netwo ls. D"	rk pass	word in pro	ovideo	d text fie	eld. Press Save
'rofile Ioir	d) If bu e in use: defaut n Network Back to scan res	necessary, pro utton afterward t c: "AndroidAP55F WPA passphra	ovide netwo ls. P"	rk pass	word in pro	ovideo	d text fie	eld. Press Save
Profile Join E [/AN our W Open	d) If bu e in use: defaut n Network Back to scan res e) Bu co I AN configuration ration Mode	necessary, pro utton afterward c: "AndroidAP55F WPA passphra sults efore new sett prrect – WiFi in n determines how the router w	ovide netwo ls. or se ings are app terface used	rk pass ø blied, pl d as gat	word in pro	ovideo le che e sysi	d text fie eck that tem.	eld. Press Save
Profile Join E E VAN Open	d) If bu e in use: defaut n Network Back to scan res e) Bu CC I AN configuration ration Mode Main WAN	necessary, pro utton afterward c: "AndroidAP55F WPA passphra sults efore new sett prrect – WiFi in n determines how the router w	ovide netwo ls. D" use ings are app terface used ill be connecting to the i	rk pass olied, pl d as gat	word in pro	ovideo le che e sysi	d text fie eck that tem.	eld. Press Save
Profile Join Join Join Join Join Join Join VAN	d) If bu e in use: defaut n Network Back to scan res e) Bu CC I AN configuration ration Mode Main WAN	necessary, pro utton afterward : ''AndroidAP55F WPA passphra sults efore new sett prrect – WiFi in n determines how the router w	ovide netwo ls. D" ise ings are app iterface used ill be connecting to the i Interface Name WiFi (WAN)	rk pass blied, pl d as gat nternet.	word in pro ease doubl eway to the IP Address	ovideo le che e syst	d text fie eck that tem.	eld. Press Save
Profile Join Ur W Open	d) If bu e in use: defaul n Network Back to scan res e) Ba cc I AN configuration ration Mode Main WAN	necessary, pro utton afterward t c: "AndroidAP55F WPA passphra sults efore new sett prrect – WiFi in n determines how the router w	ovide netwo ls. D" ise ings are app iterface used ill be connecting to the i Interface Name WiFi (WAN) Wired (WAN2)	rk pass blied, pl d as gat nternet.	word in pro	ovideo le che e sysi sort	d text fie eck that tem.	eld. Press Save
Profile Ioii Ioii Ioii Ioii Ioii Ioii Ioii Ioi	d) If but a in use: defaut n Network Back to scan res e) Bu co Main WAN	necessary, pro utton afterward t c: "AndroidAP55F WPA passphre sults efore new sett prrect – WiFi in a determines how the router w	Dvide netwo ls. D" ase ings are app iterface used ill be connecting to the i Interface Name WiFi (WAN) Wired (WAN2) Mobile (WAN3)	rk pass rk pass olied, pl d as gat nternet. Protocol DHCP DHCP None	word in pro	ovideo le che e sysi sort	d text fie	eld. Press Save
rofik loii VAN ur W Dper	d) If bu e in use: defaul n Network Back to scan res e) Ba cc I AN configuration ration Mode Main WAN	necessary, pro utton afterward sutton afterward wPA passphra sutts efore new sett prrect – WiFi in n determines how the router w	ovide netwo ls. D" ise ings are app iterface used ill be connecting to the i literface Name WiFi (WAN) Wired (WAN2) Mobile (WAN3)	rk pass blied, pl d as gat nternet. Protocol DHCP DHCP None	word in pro	ovideo le che e sysi sort	d text fie eck that tem.	eld. Press Save

6. Press Status button to check the all-interface statuses

Modem connection status can be observed under Status \rightarrow Overview information menu.

Note: connection to router via WiFi! MI 2892 connected to router via LAN port.

_			
O١	/er	vie	W
	/ei	A IC	WW

System 🗓 🖸	9.0% CPU load	Mobile		-77 dBm 📶
Router uptime	0d 14h 22m 42s(since 2020-12-16, 20:25:48)	Data connection	Disconnected	
Local device time	2020-12-17, 10:48:30	State	registered (home	e); MOBITEL; GSM
Memory usage	RAM: 47% used FLASH: 20% used	SIM card status	SIM (Ready)	
Firmware version	RUT2XX_R_00.01.12.3	Bytes received/sent *	6.9 MB / 6.4 MB	
Wireless 🗈 🖸	ON 🛜	WAN 🖬 🖸		WiFi interface is used gateway to the system
SSID	AndroidAP55FD (STA); ■ RUT240_F674 (IP address	192.168.43.242	Private IP address
Mode	1 - STA; 1- AP; 6 CH (2.437 GHz)	 WAN failover status	Failover link is d	isabled
Local Network 🗓 🖸		Remote Manageme	nt System 🖾 🖾	ON 🝙
IP / netmask	192.168.1.1 / 255.255.255.0	Status	Standby	
DHCP Leases	3	Connection State	Error: Device is login to rms.telto account device I	not registered in RMS. Please onika.lt and add this device to your ist.

7. Connection check and further steps

Assure that your PC is accessing to the internet only by A 1753 4G and Wi-Fi Router (disconnect other communication channels) and try to access <u>www.google.com</u> with your browser. If success, router is now ready for use with the instrument.

If internet connection over A 1622 3G and Wi-Fi Router is not established:

- Verify hardware connections (SIM card, supply, patch cables, antennas,...)
- Reset Router and repeat setup procedure.
- Check if Wi-Fi signal is present.
- Contact Metrel for assistance.

Instrument should be now set up in the same manner as described in user manual under section: "Remote instrument connection (over Internet)". Please check this section in manual and follow described connection procedure.

8. Connect instrument and modem with Ethernet cable. Use Ethernet port marked as "LAN" on the Router.



Figure 10: Router and MI 2892 connection

3.3 Network overview

3.3.1 Status \rightarrow Network

Mobile	WAN	LAN	Wireless	OpenVPN	VRRP	Access

Mobile Information

Mobile 📶	
Data connection state	Disconnected
IMEI	860425046860118
IMSI	293411100206138
ICCID	8938641010412061381F
Sim card state	Ready
Signal strength	-77 dBm
Cell ID	4842
Operator	MOBITEL
Operator state	Registered (home)
Connection type	2G (GSM)
Connected band	CDMA BC0
Bytes received *	6.9 MB (7256320 bytes)
Bytes sent *	6.4 MB (6745777 bytes)

Reboot modem C Restart connection C (Re)register C

Refresh C

Mobile WAN LAN Wireless Open	VPN VRRP Access
WAN Information	
WAN	
Interface	Wireless
Туре	DHCP
IP address	192.168.43.242
WAN MAC	00:1e:42:2f:f6:74
Netmask	255.255.255.0
Gateway	192.168.43.1
DNS 1	192.168.43.1
Connected	0h 7m 21s
Ports	

WAN Failover Status

WAN failover link is disabled

Refresh C

Access

LAN Information

LAN Information					
Name	IP address	IPv6 address(es)	Netmask	Ethernet MAC address	Connected for
Lan	192.168.1.1	-	255.255.255.0	00:1E:42:2F:F6:72	14h 23m 51s
DHCP Leases					
Hostname	IP address	LAN name	MAC a	ddress	Lease time remaining
mhribar	192.168.1.112	Lan	74:E5:F	9:09:12:5D	11h 57m 33s
?	192.168.1.246	Lan	38:AF:I	07:AF:58:CB	11h 54m 0s
MI2892_18200373	192.168.1.214	Lan	1E:35:	37:15:01:00	11h 25m 10s

Ports



Mobile WAN	LAN	Wireless	OpenVPN	VRRP	Access			
Wireless Info	rmatio	on						
Wireless Informa	ation							
Channel			6 (2	.437 GHz)				
Country code			00 (World)				
Wireless Status								
SSID	Mod	le	Enci	yption		Wireless MAC	Sign	al quality Bit rate
AndroidAP55FD	Stat	ion (STA)	WPA	2 PSK (CC	MP)	C6:93:D9:61:55	5:FD 50%	65.0 MBit/s
RUT240_F674	Acc	ess Point (AP)	WPA	2 PSK (TKI	P, CCMP)	02:1E:42:2F:F6	63%	58.5 MBit/s
Associated Stati	ons							
MAC address		Device na	me S	ignal	RX rate		TX rate	
74:E5:F9:09:12:5D		mhribar	-(66 dBm	65.0 Mbit	/s, MCS 6, 20MHz	65.0 Mbit	t/s, MCS 7, 20MHz
74:E5:F9:09:12:5D		mhribar	-(66 dBm	65.0 Mbit	/s, MCS 6, 20MHz	65.0 Mbit	t/s, MCS 7, 20MHz

Refresh C

4 Firmware upgrade

Modem producer upgrade router firmware to offer end user most advanced features. Actual router firmware is visible under System – Firmware.

Profile in use: default			FW ver.: RUT2XX_R_00.01.12.3
Firmware FOTA			
Firmware			
Current Firmware Inform	ation	Firmware Available On Se	rver
Firmware version	RUT2XX_R_00.01.12.3	Firmware version	RUT2XX_R_00.01.13.1
Firmware build date	2020-07-01, 08:11:52		
Kernel version	3.18.44		
Bootloader version	3.2.2		
Firmware Upgrade Settin	gs		
Keep all settings			
Upgrade from server 🗸			

If firmware on the server is newer than firmware on the router, we suggest to upgrade it.

Firmware

Current Firmware Inform	nation	Firmware Available	On Server
Firmware version	RUT2XX_R_00.01.12.3	Firmware version	RUT2XX_R_00.01.13.1
Firmware build date	2020-07-01, 08:11:52		
Kernel version	3.18.44		
Bootloader version	3.2.2		
Firmware Upgrade Setti	ngs		
Keep all settings			
Upgrade from server Upgrade from server Upgrade from file			

Upgrade from file Upgrade

Upgrade could be done direct from the server, or from BIN file, downloaded from the https://wiki.teltonika-networks.com/view/RUT240_Firmware_Downloads

Firmware Upgrade Settings		
Keep all settings		
Upgrade from file	Firmware image file Choose File RUT2XX_RWEBUI.bin	
Upgrade		

Firmware

Firmware upgrade -verification succeeded

The new firmware image was uploaded successfully. This is the last chance to abort the firmware upgrade if required. Click "Upgrade" below to start the firmware upgrade procedure.

Checksum: d9390127a725a8775b1ba50e66263535

- Size: 12.63 MB(15.19 MB available)
- All configuration files will be kept.

Cancel

Upgrade

5 WAN port configuration as LAN

Router's WAN port could be configured as LAN port. In this case, **two PQA's could** be connected to one router and read remotely.

Network \rightarrow LAN

LAN

Configuration	
General Setup	Advanced Settings
	Override MTU 1500
	Use gateway metric 0
	Use WAN port as LAN 🗹

6 Technical Specifications

In this section basic router specification is given. For complete technical specification please check RUT 240 user manual, provided by Teltonika.

6.1 General specification

Dimensions	74 mm L x 83 mm W x 25 mm H
Weight	125 g
Ethernet Cable length	1.5 m
Power Supply	9 - 30V / 1 A
Power consumption	< 5W
Antenna	2 x SMA for LTE, 1 x RP-SMA for WiFi antenna
	connectors
Data transfer	2G/3G/4G, Wi-Fi, Ethernet
Status indicators	3 x connection type status LEDs, 5 x connection strength
	LEDs, 2 x LAN status LEDs, 1 x power LED.
Operating temperature	$-40 {}^{0}\text{C} \div 75 {}^{0}\text{C}$
Storage temperature	$-45 {}^{0}\text{C} \div 80 {}^{0}\text{C}$

6.2 Mobile

Mobile module	4G (LTE) – Cat 4 up to 150 Mbps, 3G – Up to 42 Mbps, 2G – Up to 236.8 kbps
Status	Signal strength (RSSI), SINR, RSRP, RSRQ, EC/IO, RSCP Bytes sent/received
Bridge	Direct connection (bridge) between mobile ISP and device on LAN
SMS SMS status, SMS configuration, send/read SMS via HTTP POST/GET, EM SMS, SMS to EMAIL, SMS to HTTP, SMS to SMS, scheduled SMS, SMS a SMPP	
Passthrough	Router assigns its mobile WAN IP address to another device on LAN
APN	Auto APN
Black/White list	Operator black/white list
Multiple PDN (optional)	Possibility to use different PDNs for multiple network access and services
Band management	Band lock, Used band status display

6.3 Wireless

Wireless mode	IEEE 802.11b/g/n, Access Point (AP), Station (STA)
WiFi	WPA2-Enterprise (with external/internal Radius server), WPA2-PSK, WPA-PSK, WEP, MAC Filter
WiFi security	WPA2-Enterprise - PEAP, TLS, TTLS, AES-CCMP, TKIP, Auto Cipher modes, Client separation
SSID	SSID stealth mode and access control based on MAC address
WiFi users	Up to 50 simultaneous connections
Wireless Hotspot	Captive portal (Hotspot), internal/external Radius server, built in customizable landing page

6.4 Ethernet

WAN	1 x WAN port (can be configured to LAN) 10/100 Mbps, comply IEEE 802.3, IEEE 802.3u standards, supports auto MDI/MDIX
LAN	1 x LAN port, 10/100 Mbps, comply IEEE 802.3, IEEE 802.3u standards, supports auto MDI/MDIX

6.5 Network

Routing	Static routing, Dynamic routing (BGP, OSPF v2, RIP v1/v2, RIPng, OSPF6)
VoIP passthrough support	H.323 and SIP-alg protocol NAT helpers, allowing proper routing of VoIP packets
Network protocols	TCP, UDP, IPv4, IPv6, ICMP, NTP, DNS, HTTP, HTTPS, FTP, SMTP, SSL v3, TLS, ARP, VRRP, PPP, PPPoE, UPnP, SSH, DHCP, Telnet, SMNP, MQTT, Wake On Lan (WOL)
Connection monitoring	Ping Reboot, Periodic Reboot, LCP and ICMP for link inspection
Firewall	Port forward, traffic rules, custom rules
DHCP	Static and dynamic IP allocation, DHCP Relayed
QoS / Smart Queue Management (SQM)	Traffic priority queuing by source/destination, service, protocol or port, traffic priority queuing by source/destination, service, protocol or port, WMM, 802.11e
DDNS	Supported >25 service providers, others can be configured manually
Network backup	VRRP, Mobile, Wired and WiFi WAN options, each of which can be used as backup, using automatic Failover
Load balancing	Balance your internet traffic over multiple WAN connections

6.6 Security

Authetication	Pre-shared key, digital certificates, X.509 certificates							
Firewall	Pre-configured firewall rules can be enabled via web-ui, unlimited firewall configuration via CLI; DMZ; NAT; NAT-T							
Attack prevention	DDOS prevention (SYN flood protection, SSH attack prevention, HTTP/HTTPS attack prevention), port scan prevention (SYN-FIN, SYN-RST, X-mas, NULL flags, FIN scan attacks)							
WiFi security	WPA2-Enterprise – PEAP, EAP-TLS, TLS, TTLS. AES-CCMP, TKIP, Auto Cipher modes, Client separation							
VLAN	Tag based VLAN separation							
Mobile quota control	Set up custom data limits for the SIM card							
WEB filter	Blacklist for blocking out unwanted websites, whitelist for specifying allowed sites only							
Access control	Flexible access control of TCP, UDP, ICMP packets, MAC address filter							

7 Einführung

Metrel-Geräte (MI 2892 Power Master XT, MI 2892 Power, MI 2885 Master Q4) können über den Ethernet-Kommunikationsanschluss des Instruments ferngesteuert werden.

An Messstellen, wo 4G / 3G / 2G-Mobil oder Wi-Fi-Kommunikation zur Verfügung steht, kann dieser Router verwendet werden, um eine Kommunikations-Brücke zum Messgerät herzustellen. Der 4Gund Wi-Fi-Router А 1753 ist ein Hochgeschwindigkeits-WLAN- und 4G-Gateway für den Fernzugriff auf die von Metrel zertifizierten und getesteten Messungen. In diesem Handbuch wird der MI 2892 Power Master als Beispiel verwendet, jedoch werden andere Metrel-Power-Quality-Messgeräte mit Ethernet-Anschluss in ähnlicher Weise verwendet. Zwei Konfigurationen werden unterstützt und beschrieben:

- Geräte Fernkommunikation über 2G/3G/4G-Netzwerk
- Geräte Fernkommunikation über Wi-Fi-Netzwerk

Für andere Verbindungs- und Konfigurationsmöglichkeiten lesen Sie bitte die Bedienungsanleitung des RUT 240 des OEM-Herstellers Teltonika <u>www.teltonika.lt</u>.

Im Standard-Set enthalten sind:

- Router RUT240
- Euro PSU
- 2 x LTE-Antennen (schwenkbar, SMA Stecker)
- 1 x WiFi-Antenne (schwenkbar, RP-SMA Stecker)
- Ethernet Kabel (1.5 m)
- Installationsanleitung 20 753 169



Abbildung 11: Modem RUT240 Standard-Set

8 Fernkommunikation über 2G/3G/4G-Netzwerk

8.1 Router Verbindung

Nach dem Auspacken führen Sie bitte, um den Router ordnungsgemäß einzurichten und anzuschließen, die folgenden Schritte durch.

7. Ziehen Sie die SIM-Halterung durch Drücken der Nadel (1) heraus und führen Sie die SIM-Karte ein, die Sie von Ihrem ISP (Internet Service Provider) erhalten haben. Setzen Sie die SIM-Karte in den Halter (3) ein und setzen ihn wieder in das Modem ein. (4) Die korrekte Ausrichtung der SIM-Karte ist in der folgenden Abbildung dargestellt.



- 1. Push the SIM holder button with the SIM needle
- 2. Pull out the SIM holder
- 3. Insert yout SIM card into the SIM holder
- 4. Slide the SIM holder back into the router
- 5. Attach Mobile and WiFi antennas

Abbildung 2: Einführen der SIM-Karte

- 8. Befestigen Sie die Mobilfunkt (LTE (2x)) und Wifi-Antennen.
- 9. Verbinden Sie das Netzteil mit der Buchse an der Vorderseite des Geräts. Anschließend stecken Sie das Netzteil in die Steckdose.
- 10. Schließen Sie die Geräte, wie in der Abbildung unten gezeigt, an
 - Der Router kann über das Wi-Fi-Netzwerk, durch Suche des Zugriffspunkts RUT240_*** SSID auf dem PC, eingerichtet werden. In diesem Fall ist keine Ethernet-Verbindung mit dem PC erforderlich.
 - Andernfalls verwenden Sie ein Ethernet-Kabel, um den Router mit dem PC zu verbinden.

11. Nach dem erfolgreichen Einrichten des Routers, verbinden Sie den Router (Lan-Port) und das PQ-Instrument unter Verwendung des Ethernet-Kabels. Das PQ-Instrument sollte ordnungsgemäß programmiert werden.

COMMUNICATION	≬⊂ 01:57		
PC connection	INTERNET (3G/GPRS)		
Com Port (PS/2)	GPS		
Secret key	0000		
Modem used in A1565	NO		
MAC address	1E:35:B7:15:01:00		
Instrument host name	MI2892_18200373		
IP address / S/N	192.168.1.214 / 18200373		

Abbildung 12: Kommunikationseinrichtung für PQ-Instrument für Verbindung mit 4G-Router



to 4G router

Abbildung 13: Router-4G-Verbindung

12. Schalten Sie Router, das PQ-Instrument und den PC ein.

In den folgenden Abbildungen finden Sie eine Beschreibung der Vorder- und Rückseite des Routers.



Abbildung 5: Router-Frontplatte und Pinout der Steckdose



Abbildung 6: Router-Rückseite

8.2 Router einrichten

Vor der ersten Verwendung muss der Router eingerichtet werden, damit er mit dem LTE-Netz zusammenarbeiten kann.

1. Verbindung zum Router herstellen:

a. Über **Wi-Fi**, suchen Sie nach dem Zugriffspunkt **RUT240**_***** (für jedes Gerät einmalig) auf Ihrem Computer, und stellen Sie eine Verbindung her. SSID und Passwort winden Sie auf dem Router-Informationsetikett.

RUT240	06E000 1108555390	Batch no: 086
	860425046860118	
LAN MAC WIFI SSID WIFI PASSWO	001E422FF672 RUT240_F674 RD z0NKw16P	

Abbildung 14: Etikett mit SSID- und Passwort-Informationen



b. Über LAN (Ethernet) Netzwerk, verbinden Sie das Ethernet-Kabel an den Computer und den LAN-Ethernet-Anschluss des Routers, gekennzeichnet mit "LAN", an.

Der Router wird automatisch erkannt (IP-Adresse wird automatisch abgerufen)



	9	Ethernet Properties	×
	P	Networking Authentication Sharing	Internet Protocol Version 4 (TCP/IPv4) Properties X
📱 Ethernet Status	×	Connect using:	Connect in the Connection
General		Intel(R) Ethemet Connection (4) I219-LM	General Alternative Configuration
Connection IPv4 Connectivity:	Internet	Configure This connection uses the following items:	You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
IPv6 Connectivity: No ne	twork access	Client for Microsoft Networks	Obtain an IP address automatically
Duration:	00:12:33	The and Printer Sharing for Microsoft Networks	O Use the following IP address:
Speed:	100.0 Mbps	Internet Protocol Version 4 (TCP/IPv4)	IP address:
Details		Microsoft Network Adapter Multiplexor Protocol	Subnet mask:
		Internet Protocol Version 6 (TCP/IPv6)	Default gateway;
Activity		Instal Uninstal Properties	Obtain DNS server address automatically
Sent — 💵 —	Received	Description	O Use the following DNS server addresses:
10		Transmission Control Protocol/Internet Protocol. The default	Preferred DNS server:
Bytes: 2.938.397	4.358.170	across diverse interconnected networks.	Alternative DNS server:
Properties Diagnose Diagnose			Validate settings upon exit Advanced
	Close	OK Canor	el OK Cancel

2. Starten Sie Ihren Browser und geben Sie die IP-Adresse des Routers in das Adressfeld ein:

6	1	107 168 1 1	
	hand	132,100,1,1	
~			

3. Wenn die Verbindung erfolgreich hergestellt wurde, wird ein Anmeldebildschirm angezeigt:

Authorization Required					
Plea <mark>se ente</mark>	your username and password.				
Username	admin				
Password					
	Login				

Geben Sie das Standardkennwort **admin01** in das Feld Passwort ein und klicken Sie dann auf die Schaltfläche Anmelden.

Hinweis: Wenn Sie sich das erste Mal einloggen, werden Sie aufgefordert, Ihr Passwort aus Sicherheitsgründen zu ändern. Das neue Passwort muss mindestens 8 Zeichen, davon mindestens einen Großbuchstaben, einen Kleinbuchstaben und eine Zahl, enthalten. Dieser Schritt ist zwingend; Sie können erst nach der Änderung des Passworts mit der WebUI Ihres Routers interagieren. A 1753 4G and Wi-Fi Router

Profile in use: default				FW ver.: RUT2XX_R_00.01.12.
Change passwo	ord			
You must change passwo	ord to leave this page! Pass	word requirements: Minimur	n 8 characters, at le	ast one uppercase letter, one lowercase letter and one number.
Administrator Pass	sword			
	New password	Teltonika01	ø	
	Confirm new password	Teltonika01	ø	
				Save
4. Um dei Ändern •	n Router einzi i von: Zeitzonenein	stellungen	der Install	EW ver: RUT2XX R 00 01 12 3
Step 1 - General	Step 2 - Mobile Ste	p 3 - LAN Step 4 - WiFi	Step 5 - RMS	
Step - Genera Please select your time Time Zone Settin	l azone. gs			
	Current system tim	e 2020-11-23 12:28:01		Sync with browser

Skip Wizard	Next
Stellen Sie die Parameter des Mobilfunknetzes (APN	

Stellen Sie die **Parameter des Mobilfunknetzes** (APN, Authentifizierungsmethode, Benutzername, Kennwort) gemäß der Spezifikation des Mobilfunkanbieters ein.

		-		17	2
Step 1 - General Step 2 - Mobile Step 3	3 - LAN	Step 4 - WiFi	Step 5 - RMS		
Mobile Configuration					
Next, let's configure your mobile settings so you can s	start using in	ternet <mark>rig</mark> ht away	I.		
Mobile Configuration					
Auto APN					
APN	custom	- *	1		
Custom APN	internet				
Authentication method	PAP 🗸				
Username	mobitel				
Password			Ø		
PIN number					
Dialing number	*99#				
MTU	1500				
Service mode	Automatic	~			
Show mobile info at login page					
Skip Wizard					Next

5. Ändern Sie bei Bedarf das LAN-Setup, andernfalls lassen Sie es unverändert.

Profile in use: default						FW ver.: RUT2XX_R_00.01.12.3
Step 1 - General	Step 2 - Mobile	Step 3	- LAN	Step 4 - WiFi	Step 5 - RMS	
Step - LAN						
Here we will setup the	basic settings of a typ	ical LAN (configurati	on. The wizard wi	Il cover 2 basic co	nfigurations: static IP address LAN and DHCP client.
General configur	ration					
	IP	address	192.168.1	1.1		
	1	Netmask	255.255.2	255.0		
	IPv6 Prefit	< Length	60			
ULA Prefix						
	UL	A Prefix				
	DHCPv	6 server	Enabled	~		
	R	A server	Enabled	~		
	ND	P server	Enabled	~		
	Enabl	e DHCP	~			
		Start	100			
		Limit	150			
	Le	ase time	12		Hours ¥	
	Start IP	address:	192,168,1	100		
	End IP	address:	192.168.1	250		
Skip Wizard						Next

6. Richten Sie das **drahtlose Netzwerk** ein, falls nötig, andernfalls lassen Sie es unverändert. Vergessen Sie nicht, es mit Passwort und Verschlüsselung zu schützen.

Step 1 - General	Step 2 - Mobile	Step 3 - LAN	Step 4 - WiFi	Step 5 - RMS	i
Step - Wireles	s				
Now let's configure you be dropped and you wi	ir wireless radio. (Note Il have to reconnect w	e: if you are curre vith a new set of p	ntly connecting via v parameters.)	vireless and you o	change parameters, like SSID, encryption, etc. your connection will
WiFi Configuration	n				
	Enable	wireless 🗸			
		SSID RUT24	10_F674		
		Mode 802.1	1g+n ∽		
	(Channel Auto	~		
	En	cryption WPA2	-PSK	~	
		Cipher Force	TKIP and CCMP (A	ES) 🛩	
		Key Z0NKw	/16P	ø	
	Count	ry Code 00 - W	/orld	*	
Skip Wizard					Next

- 7. Drücken Sie die Taste **Speichern**. Der Router verwendet nun die neuen Einstellungen und startet neu.
- 8. Wählen Sie **WAN-Schnittstelle** als **Mobilfunk-**Schnittstelle als Gateway zum System.

Overview

		31.8% CPU load	Mobile 🛄	0			-73 dBm 📶
Router uptime	0d 13h 37m 19s(sinc	e 2020-12-16, 20:25:49)	Data connec	tion	0d 0h 2m 25s(si	ince 2020-12-17,	10:00:43)
Local device time	2020-12-17, 10:03:08		State		registered (hom	e); MOBITEL; G	SM
Memory usage	RAM: 50% used	FLASH: 20% used	SIM card sta	itus	SIM (Ready)		
Firmware version	RUT2XX_R_00.01.12	2.3	Bytes receiv	ed/sent *	4.2 MB / 3.9 MB	3	
Wireless 🗓 🖸		ON 📚	WAN 🖩 🖾				Mobile 🙀
SSID	B RUT240_F674 (AF	?)	IP address		100.80.18.123	W Pul	blic IP address
Mode	1- AP; 11 CH (2.462)	GHz)	WAN failove	r status	Failover link is o	disabled	
Local Network	۵		Remote M	anageme	nt System		ON 📿
IP / netmask	192.168.1.1 / 255.25	5.255.0	Status		Standby		
DHCP Leases	1		Connection	State	Error: Device is login to rms.telto account device	not registered in onika.lt and add t list.	RMS. Please his device to you
VAN our WAN configuration of Operation Mode	determines how the router w	- ill be connecting to the internet.					
VAN four WAN configuration Operation Mode Main WAN	determines how the router w WAN Failover	ill be connecting to the internet.	- Protocol I	P Address	Sort		
VAN four WAN configuration of Operation Mode Main WAN	determines how the router w WAN Failover	ill be connecting to the internet. Interface Name Mobile (WAN)	Protocol I None	P Address	Sort 3	Edit	_
VAN Your WAN configuration of Operation Mode Main WAN Main WAN Main WAN	determines how the router w WAN Failover	ill be connecting to the internet. Interface Name Mobile (WAN) WiFi (WAN3)	Protocol I None ·	P Address	Sort 3	Edit	

9. Drücken Sie die Taste **Status** -> Überblick, um den Status aller Schnittstellen zu überprüfen

Overview

System 🔟 🖸		31.8% CPU load	Mobile 🖬 🖸		-73 dBm 📶
Router uptime	0d 13h 37m 19s(since	2020-12-16, 20:25:49)	Data connection	0d 0h 2m 25s(since 2	020-12-17, 10:00:43)
Local device time	2020-12-17, 10:03:08		State	registered (home); MO	OBITEL; GSM
Memory usage	RAM: 50% used	FLASH: 20% used	SIM card status	SIM (Ready)	
Firmware version	RUT2XX_R_00.01.12.	3	Bytes received/sent *	4.2 MB / 3.9 MB	
Wireless 🛙 🖸		ON 📚	WAN 🖬 🖸		Mobile 😭
SSID	B RUT240_F674 (AP)		IP address	100.80.18.123	Public IP address
Mode	1- AP; 11 CH (2.462 G	Hz)	WAN failover status	Failover link is disable	ed
Local Network	0		Remote Manageme	ent System	ON 🍙
IP / netmask	192.168.1.1 / 255.255.	255.0	Status	Standby	
DHCP Leases	1		Connection State	Error: Device is not re login to rms.teltonika.l account device list.	gistered in RMS. Please It and add this device to your

10. Verbindungsprüfung und weitere Schritte

Vergewissern Sie sich, dass Ihr PC nur über A 1753 4G und Wi-Fi-Router mit dem Internet verbunden it (trennen Sie andere Kommunikationskanäle) und versuchen Sie mit Ihrem Browser auf <u>www.google.com</u> zuzugreifen. Falls dies gelingt, ist Ihr Router bereit zur Verwendung mit dem Instrument.

Wenn keine Internetverbindung über A 1753 4G und Wi-Fi-Router hergestellt werden kann:

- Überprüfen Sie die Hardwareverbindungen (SIM-Karte, Stromversorgung, Patchkabel, Antennen,)
- Überprüfen Sie, ob beim Setup die PIN-Nummer richtig eingegeben wurde oder inaktiviert werden sollte.
- Setzen Sie den Router zurück und wiederholen Sie den Vorgang.
- Überprüfen Sie, ob ein 4G- oder WLAN-Signal vorhanden ist.
- Kontaktieren Sie Metrel, wenn Sie Hilfe benötigen.

Das Gerät sollte jetzt so eingerichtet werden, wie im Benutzerhandbuch im Abschnitt: "Remote-Geräteverbindung (über Internet)" beschrieben. Bitte lesen Sie diesen Abschnitt im Handbuch und folgen Sie dem beschriebenen Verfahren zur Herstellung einer Verbindung.

11. Verbinden Sie das Instrument und das Modem mit dem Ethernet-Kabel. Verwenden Sie den Ethernetanschluss am Router, der mit "LAN" markiert ist.



Abbildung 8: Router und MI 2892 Verbindung

8.3 Einrichtung - Überblick

8.3.1 Netzwerk → Mobilgerät

Mobile Configuration

Mobile Configuration	
SIM 1	
Connection type	QMI V
Mode	NAT ~
Auto APN	
APN	custom 🗸
Custom APN	internet
Authentication method	PAP V
Username	mobitel
Password	······ Ø
PIN number	
PUK code	
Dialing number	*99#
MTU	1500
Service mode	Automatic 🗸
Deny data roaming	
, , ,	
Nobile Data On Demand	
Enable	a 🗌
No data timeout (sec) 10
Network Frequency Bands	
is is band selector option. You can't force specific	band usage, you could choose it if module detects more than one band on selected network service. If all bands
e unchecked any band will be used.	
Connection method	Automatic 🗸
Force LTE network	
Enable	
Reregiste	r 🗆
Interval (sec) 300
	0
	Save

8.4 Verbindungsstatus

Der Verbindungsstatus kann unter dem Informations-Menü **Status -> Netzwerk** überprüft werden.

Hinweis Verbindung mit Router über WiFi-Zugang!

Mobile	WAN	LAN	Wireless	OpenVPN	VRRP	Access	
Mobile	Inform	nation					
Mobile	att						
Data conr	nection stat	te		Con	nected		
IMEI				8604	125046860	118	
IMSI				2934	4 1110020 61	138	
ICCID				8938	364101041	2061381F	
Sim card	state			Rea	dy		
Signal stre	ength			-81	dBm		
Cell ID				447	1		
Operator				MOE	BITEL		
Operator	state			Reg	istered (hor	ne)	
Connectio	on type			2G (GSM)		
Connecte	d band			CDN	IA BC0		
Bytes rec	eived *			5.8	MB (610860)2 bytes)	
Bytes sen	t *			5.4	MB (566320	0 bytes)	
Reboot m	odem 😋	Resta	art connection	C (Re)reg	ister C		Refresh C

Mobile	WAN	LAN	Wireless	OpenVPN	VRRP	Access				
WAN Inf	format	tion								
WAN										
Interface				Mol	bile					
Туре				QM	I					
IP address				100	.66.240.27					
Netmask				255	.255.255.24	8				
Gateway				100	.66.240.28					
DNS 1				193	.189.160.13					
DNS 2				95.	176.233.13					
Connected				0h ⁻	1m 10s					
Ports										
							_			
						.au		×		
					POWER	•	LÂN V	van		
									•	
WAN Fail	over Sta	atus			_					
					WA	N failover lir	nk is disabled			Refresh
Mobile	WAN	LAN	Wireless	OpenVPN	VRRP	Access				
LAN Info	ormati	ion								
LAN Infor	mation									
Name	mation	ID		10.	.C. a d daa a a (>	Materials		Ethomat MAC address	Connected for
Name		10	address	IPV	o address(es)			Chernet MAC address	Connected for
Lan		19	12.100.1.1	-			200.200.200.0		00.12.42.27.76.72	130 510 575
DHCP Lea	ases									
Hostname			IP address	3	LAN	N name		MAC add	Iress	Lease time remaining
mhribar			192.168.1.	112	Lan			74:E5:F9	:09:12:5D	11h 58m 38s
?			192.168.1.	246	Lan			38:AF:D7	:AF:58:CB	11h 54m 3s
MI2892_182	200373		192.168.1.	214	Lan			1E:35:B7	:15:01:00	11h 57m 24s
Porte										
Forts										





9 Remote-Kommunikation über Wi-Fi-Netzwerk

9.1 Router-Verbindung

Führen Sie ach dem Auspacken die unten angegebenen Schritte durch, um den Router ordnungsgemäß zu verbinden.

- 4. Befestigen Sie die Wi-Fi-Antenne.
- 5. Schalten Sie Router, Messgerät und PC ein.
- 6. Schließen Sie die Geräte an, wie in der Abbildung unten gezeigt.
 - a. Verwenden Sie ein Ethernet-Kabel, um den Router mit dem PC zu verbinden (LAN-Anschluss verwenden).
 - b. Router einrichten



Abbildung 9: Router Wi-Fi Verbindung

9.2 Router einrichten

- 9. Um den Router über LAN (Ethernet)-Netzwerk zu verbinden, stecken Sie das Ethernet-Kabel in den Computer und den LAN-Ethernet-Anschluss (am Router mit "LAN" markiert).
- 10. Starten Sie Ihren Browser und geben sie die IP des Routers in das Adressenfeld ein:



11. Falls die Verbindung erfolgreich war, erscheint ein Login-Bildschirm:

Authorization Required

Please enter your username and password.

Username	admin
Password	
	Login

Geben Sie Ihr eigenes Passwort (das Standardkennwort lautet: **admin01**) in das Feld Passwort ein und klicken Sie dann auf die Schaltfläche Anmelden.

- 12. **Hinweis**: Wenn Sie sich das erste Mal einloggen, werden Sie aufgefordert, Ihr Passwort aus Sicherheitsgründen zu ändern. Das neue Passwort muss mindestens 8 Zeichen, davon mindestens einen Großbuchstaben, einen Kleinbuchstaben und eine Zahl, enthalten. Dieser Schritt ist zwingend; Sie können erst nach der Änderung des Passworts mit der WebUI Ihres Routers interagieren.
- 13. Die Basiseinrichtung des Routers wurde unter Punkt 2.2 Router-Einrichtung behandelt. Dieses Benutzerhandbuch behandelt nur die WiFi-Netzauswahl für Datenübertragung und die WAN-Port-Auswahl.

a) Wählen sie im Menü **Netzwerk -> WAN** die Option WiFi (Gateway zum System). Drücken Sie auf die Schaltfläche Speichern und warten Sie, bis der Router den Betriebsmodus neu konfiguriert hat.

WAN

Your WAN configuration determines how the router will be connecting to the internet.

	Main WAN	WAN Failover	Interface Name	Protocol	IP Address	Sort	
20	0		Mobile (WAN)	None	100.81.133.200		Edit
lic.	۲		WiFi (WAN3)	DHCP		••	Edit
5	0		Wired (WAN2)	DHCP		••	Edit

b) Wählen Sie **Scan**, um verfügbare WiFi-Netze zu finden.

Оре	eration Mode	1				
	Main WAN	WAN Failover	Interface Name	Protocol	IP Address	Sort
((:-	۲		WiFi (WAN)	DHCP	-	Edit Scan
			Wired (WAN2)	DHCP	-	• • Edit
(₁)			Mobile (WAN3)	None	100.81.133.200	e Edit

c) Wählen Sie das geeignete WiFi-Netz und drücken Sie **Mit Netzwerk** verbinden.

Profile in use: default	FW ver.: RUT2XX_R_00.01.12.3
default1 47% Channel: 1 Mode: Master BSSID: 74:DA:38:C8:BF:86 Encryption: WPA2 PSK (CCMP)	Join Network
AndroidAP55FD AndroidAP55FD S1% Channel: 6 Mode: Master BSSID: C6:93:D9:61:55:FD Encryption: WPA2 PSK (CCMP)	Join Network
	Repeat scan

d) Falls nötig, geben Sie das Netzkennwort in dem dafür vorgesehenen Textfeld ein. Klicken Sie danach die Schaltfläche **Speichern**.

Profile in use: default		FW ver.: RUT2XX_R_00.01.12.3
Join Network: "AndroidAP55FD"		
WPA passphrase	 ø	
Back to scan results		Save

e) Vor der Übernahme neuer Einstellungen überprüfen Sie bitte nochmals, ob alle Einstellungen korrekt sind - die WiFi-Schnittstelle, die als Gateway zu dem System verwendet wird.

WAN

Your WAN configuration determines how the router will be connecting to the internet.

	Main WAN	WAN Failover 🗸	Interface Name	Protocol	IP Address	Sort		
lle.	۲		WiFi (WAN)	DHCP	192.168.43.242		Edit	Scan
ÿ	0		Wired (WAN2)	DHCP	-	••	Edit	
1)			Mobile (WAN3)	None		••	Edit	

14. Klicken Sie auf die Taste **Status**, um den Status jeder Schnittstelle zu überprüfen.

Der Modem-Verbindungsstatus kann im Informationsmenü **Status -> Übersicht** angesehen werden.

Hinweis:Verbindung mit Router über WiFi! MI 2892 über LAN-Anschluss mit Router verbunden.

Overview

System 🗉 🖸	9.0%	CPU load	Mobile 🛄 🖸		-77 dBm 📶	
Router uptime	0d 14h 22m 42s(since 2020-12-16, 20	0:25:48)	Data connection	Disconnected		
Local device time	2020-12-17, 10:48:30		State	registered (home	e); MOBITEL; GSM	
Memory usage	RAM: 47% used FLASH: 20	% used	SIM card status	SIM (Ready)		
Firmware version	RUT2XX_R_00.01.12.3		Bytes received/sent *	6.9 MB / 6.4 MB		
Wireless 🗓 🖸		ON 察	WAN 🖬 🖻		WiFi interface is used gateway to the system	а
SSID	AndroidAP55FD (STA); RUT240	_F674 (IP address	192.168.43.242	Private IP address	Γ
Mode	1 - STA; 1- AP; 6 CH (2.437 GHz)		WAN failover status	Failover link is d	lisabled	1
Local Network 🛍 🖸			Remote Manageme	nt System 🖸 🔤	ON 🝙	
IP / netmask	192.168.1.1 / 255.255.255.0		Status	Standby		
DHCP Leases	3		Connection State	Error: Device is login to rms.telto account device I	not registered in RMS. Please onika.lt and add this device to your list.	

7. Verbindungsprüfung und weitere Schritte

Stellen Sie sicher, dass Ihr PC nur über A 1753 4G und Wi-Fi Router auf das Internet zugreift (trennen Sie andere Kommunikationskanäle) und versuchen Sie mit Ihrem Browser auf <u>www.google.com</u> zuzugreifen. Bei erfolgreichem Zugriff ist der Router bereit für den Einsatz mit dem Messgerät.

Wenn eine Internetverbindung über A 1753 4G und Wi-Fi-Router nicht hergestellt werden kann:

- Überprüfen Sie die Hardwareverbindungen (SIM-Karte, Stromversorgung, Patchkabel, Antennen, ...)
- Setzen Sie den Router zurück und wiederholen Sie den Vorgang.
- Überprüfen Sie, ob ein WiFi-Signal vorhanden ist.
- Kontaktieren Sie Metrel, wenn Sie Hilfe brauchen.

Das Gerät sollte jetzt so eingerichtet werden wie im Benutzerhandbuch im Abschnitt "Remote-Geräteverbindung (über Internet)" beschrieben. Bitte lesen Sie diesen Abschnitt im Handbuch und folgen Sie dem beschriebenen Verfahren zur Herstellung einer Verbindung.

8. Verbinden Sie das Instrument und das Modem mit dem Ethernet-Kabel. Verwenden Sie den mit "LAN" markierten Ethernet-Port am Router.



Abbildung 10: Verbindung von Router und MI 2892

9.3 Netzwerk - Übersicht

9.3.1 Status -> Netzwerk

Mobile	WAN	LAN	Wireless	OpenVPN	VRRP	Access	
Mobile	Inform	ation					
Mobile	dl						
Data conn	ection stat	e		Disc	onnected		
IMEI				8604	125046860	118	
IMSI				2934	111002061	38	
ICCID				8938	3641010412	2061381F	
Sim card s	tate			Rea	dy		
Signal stre	ength			-77 (dBm		
Cell ID				4842	2		
Operator				MOE	BITEL		
Operator s	tate			Regi	stered (hor	ne)	
Connectio	n type			2G (GSM)		
Connected	d band			CDN	IA BC0		
Bytes rece	ived *			6.91	MB (725632	20 bytes)	
Bytes sent	*			6.4 1	MB (674577	77 bytes)	
Reboot m	odem C	Resta	rt connection	C (Re)regi	ister C		Refresh 3

Mobile	WAN	LAN	Wireless	OpenVPN	VRRP	Access
WAN In	forma	tion				
WAN						
Interface				Wire	less	
Туре				DHC	P	
IP address	3			192.	168.43.242	
WAN MAC	MAC 00:1e:42:2f:f6:74					
Netmask				255.	255.255.0	
Gateway				192.	168.43.1	
DNS 1				192.	168.43.1	
Connected	đ			0h 7	m 21s	





WAN Failover Status

WAN failover link is disabled

Refresh C

enVPN VRRP Ad	Access
---------------	--------

LAN Information

LAN Information					
Name	IP address	IPv6 address(es)	Netmask	Ethernet MAC address	Connected for
Lan	192.168.1.1	-	255.255.255.0	00:1E:42:2F:F6:72	14h 23m 51s
DHCP Leases					
Hostname	IP address	LAN name	MAC add	dress	Lease time remaining
mhribar	192.168.1.112	Lan	74:E5:F9):09:12:5D	11h 57m 33s
?	192.168.1.246	Lan	38:AF:D	7:AF:58:CB	11h 54m 0s
MI2892_18200373	192.168.1.214	Lan	1E:35:B7	7:15:01:00	11h 25m 10s

Ports



Mobile WAN	LAN Wireless	OpenVPN	VRRP	Access			
Wireless Inforr	nation						
Wireless Informati	ion						
Channel		6 (2.	437 GHz)				
Country code		00 (\	Norld)				
Wireless Status							
SSID	Mode	Encr	yption		Wireless MAC	Sigi	nal quality Bit rate
AndroidAP55FD	Station (STA)	WPA	2 PSK (CCI	MP)	C6:93:D9:61:55	:FD 50%	65.0 MBit/s
RUT240_F674	Access Point (AP)	WPA	2 PSK (TKI	P, CCMP)	02:1E:42:2F:F6:	74 63%	6 58.5 MBit/s
Associated Station	ns						
MAC address	Device nam	ie S	ignal	RX rate		TX rate	
74:E5:F9:09:12:5D	mhribar	-6	6 dBm	65.0 Mbit/s	, MCS 6, 20MHz	65.0 Mb	oit/s, MCS 7, 20MHz
74:E5:F9:09:12:5D	mhribar	-6	6 dBm	65.0 Mbit/s	, MCS 6, 20MHz	65.0 Mb	oit/s, MCS 7, 20MHz

Refresh C

4 Firmware-Upgrade

Moderne Router-Upgrade-Firmware vom Hersteller, um dem Endbenutzer die besten Funktionen bereitzustellen. Die aktuelle Router-Firmware kann unter **System – Firmware** eingesehen werden.

Profile in use: default		FW ver.: RUT2XX_R_00.01.12.3
Firmware FOTA		
Firmware		
Current Firmware Inform	ation	Firmware Available On Server
Firmware version	RUT2XX_R_00.01.12.3	Firmware version RUT2XX_R_00.01.13.1
Firmware build date	2020-07-01, 08:11:52	
Kernel version	3.18.44	Check for new FW C
Bootloader version	3.2.2	
Firmware Upgrade Settin	gs	
Keep all settings	 ✓ 	
Upgrade from server 🗸		

Falls die Firmware auf dem Server neuer ist als die Firmware auf dem Router, empfehlen wir ein Upgrade.

Firmware

Current Firmware Information	I.	Firmware Available On Ser	ver
Firmware version	RUT2XX_R_00.01.12.3	Firmware version	RUT2XX_R_00.01.13.1
Firmware build date	2020-07-01, 08:11:52		Charle for now EW 🔿
Kernel version	3.18.44		Check for new FVV
Bootloader version	3.2.2		
Firmware Ungrade Settings			
i innware opgrade Settings			
Keep all settings	V		
Upgrade from server 🗸			

Upgrade from server Upgrade from file Upgrade

Ein Upgrade könnte direkt vom Server oder aus der BIN-Datei durchgeführt werden, heruntergeladen von

https://wiki.teltonika-networks.com/view/RUT240_Firmware_Downloads

Firmware Upgrade	Firmware Upgrade Settings			
Keep all settings	~			
Upgrade from file	Firmware image file	Choose File RUT2XX_RWEBUI.bin		
Upgrade				
Firmware				

Firmware upgrade -verification succeeded

The new firmware image was uploaded successfully. This is the last chance to abort the firmware upgrade if required. Click "Upgrade" below to start the firmware upgrade procedure.

Checksum: d9390127a725a8775b1ba50e66263535
 Size: 12.63 MB(15.19 MB available)

- All configuration files will be kept.

Cancel

Upgrade

5 Konfiguration des WAN-Ports als LAN

Der Wan-Port des Routers könnte als LAN-Port konfiguriert werden. In diesem Fall könnten **zwei PQAs** mit einem Router verbunden und remote gelesen werden.

Netzwerk -> LAN

LAN

Configuration		
General Setup	Advanced Settings	
	Override MTU 1500	
	Use gateway metric 0	
	Use WAN port as LAN 🗹	

6 Technische Daten

In diesem Abschnitt ist die Basis-Spezifikation für den Router angegeben. Die vollständige technische Spezifikation finden Sie in der RUT 240 Bedienungsanleitung, die von Teltonika zur Verfügung gestellt wird.

6.1 Allgemeine Angaben

Abmessungen	74 mm L x 83 mm W x 25 mm H
Gewicht	125 g
Ethernet Kabel Länge	1,5 m
Stromversorgung	9 - 30V / 1 A
Leistungsaufnahme	< 5W
Antenne	2 x SMA für LTE, 1 x RP-SMA für WiFi-
	Antennenanschlüsse
Datenübertragung	2G/3G/4G, Wi-Fi, Ethernet
Statusanzeigen	3 x Verbindungstyp-Status-LEDs, 5x Signalstärke
	LEDs, 2 x LAN-Status-LEDs 1x Strom-LED
Betriebstemperatur	-40 °C ÷ 75 °C
Lagertemperatur	$-45 {}^{0}\text{C} \div 80 {}^{0}\text{C}$

6.2 Mobil

Mobilmodul	4G (LTE) – Cat 4 bis zu 150 Mbps, 3G – bis zu 42 Mbps, 2G – bis zu 236.8 kbps						
Status	Signalstärke (RSSI), SINR, RSRP, RSRQ, EC/IO, RSCP Bytes						
	gesendet/empfangen						
Bridge Direkte Verbindung (Bridge) zwischen mobile ISP und							
	LAN						
SMS	SMS-Status, SMS-Konfiguration, SMS gesendet/empfangen über HTTP an SMS,						
	geplante SMS, SMS-Autoreply, SMPP						
Passthrough	Router ordnet seine mobile WAN-IP-Adresse einem anderen Gerät im LAN zu.						
APN	Auto APN						
Black/Withelists	Blacklist/Whitelist für Betreiber						
Multiple PDN	Möglichkeit der Verwendung unterschiedlicher PDNs für mehrere Netz-Zugänge						
(optional)	und Dienstleistungen						
Band-	Band Lock, Statusanzeige für verwendetes Band						
Management							

6.3 Drahtlos

Drahtlos-Modus	IEEE 802.11b/g/n, Zugangspunkt (AP), Station (STA)
WiFi	WPA2-Enterprise (mit externem/internem Radiusserver), WPA2-PSK, WPA-PSK, WEP, MAC Filter
WiFi Sicherheit	WPA2-Enterprise - PEAP, TLS, TTLS, AES-CCMP, TKIP, Auto Cipher Modi, Client Separation
SSID	SSID Stealth Modus und Zugriffskontrolle auf Basis von MAC-Adresse
WiFi Nutzer	Bis zu 50 Verbindungen gleichzeitig
Wireless Hotspot	Captive Portal (Hotspot), interner/externer Radiusserver, integrierte anpassbare Zielseite

6.4 Ethernet

WAN	1 x WAN Port (kann für LAN konfiguriert werden) 10/100 Mbps, kompatibel mit IEEE 802.3, IEEE 802.3u Standards, unterstützt Auto MDI/MDIX
LAN	1 x LAN-Port, 10/100 Mbps, kompatibel mit IEEE 802.3, IEEE 802.3u Standards, unterstützt Auto MDI/MDIX

6.5 Netzwerk

Routing	Statisches Routing, dynamisches Routing (BGP, OSPF v2, RIP v1/v2, RIPng, OSPF6)
VoIP passthrough Unterstützung	H.323 und SIP-alg Protokoll NAT-Helfer, Ermöglichen ordnungsgemäßes Routing von VoIP-Paketen
Netzwerkprotokolle	TCP, UDP, IPv4, IPv6, ICMP, NTP, DNS, HTTP, HTTPS, FTP, SMTP, SSL v3, TLS, ARP, VRRP, PPP, PPPoE, UPnP, SSH, DHCP, Telnet, SMNP, MQTT, Wake On Lan (WOL)
Verbindungsüberwachung	Ping Reboot, Periodischer Reboot, LCP und ICMP für Verbindungsprüfung
Firewall	Port Forward, Traffic Rules, Custom Rules
DHCP	Statische und dynamische IP-Zuweisung, DHCP Relayed
QoS / Smart Queue Management (SQM)	Verkehrspriorität-Warteschlange nach Absender/Empfänger, Dienstleistung, Protokoll oder Port, Verkehrspriorität-Warteschlange nach Absender/Empfänger, Dienstleistung, Protokoll oder Port, WMM, 802.11e
DDNS	Unterstützung >25 Dienstleister, mehr können manuell konfiguriert werden
Netz-Backup	VRRP, Mobile, Drahtgebundene und WiFi WAN Optionen, die jeweils als Backup verwendet werden können, unter Verwendung eines automatischen Failover

6.6 Sicherheit

Authentifizierung	Vorab mitgeteilter Schlüssel, digitale Zertifikate, X.509 Zertifikate
Firewall	Vorkonfigurierte Firewall-Regeln können über web-ui zugelassen werden, unbegrenzte Firewall-Konfiguration via CLI; DMZ; NAT; NAT-T
Verhinderung von Angriffen	DDOS Verhinderung (SYN Überflutungsschutz, SSH Schutz vor Angriffen, HTTP/HTTPS Schutz vor Angriffen), Verhinderung von Port-Scan (SYN-FIN, SYN-RST, X-mas, NULL flags, FIN Scan-Angriffe)
WiFi Sicherheit	WPA2-Enterprise – PEAP, EAP-TLS, TLS, TTLS. AES-CCMP, TKIP, Auto Cipher Modi, Client Separation
VLAN	Tag-basiete VLAN Separation
Mobile Quota Control	Einrichtung von kundenspezifischen Datenlimits für die SIM-Karte
WEB Filter	Blacklist zum Blockieren unerwünschter Websites, Whitelist zum Spezifizieren von nur zugelassenen Seiten
Zugriffssteuerung	Flexible Zugriffssteuerung für TCP, UDP, ICMP-Pakete, MAC-Adressenfilter