



**AMR985** MOBILE INTERNET SOLUTION  
User Manual



# Stream-Browse-Share

Designed for your  
**Mobile Life**

[avtex.co.uk](http://avtex.co.uk)

astex<sup>®</sup>



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# Antenna Installation

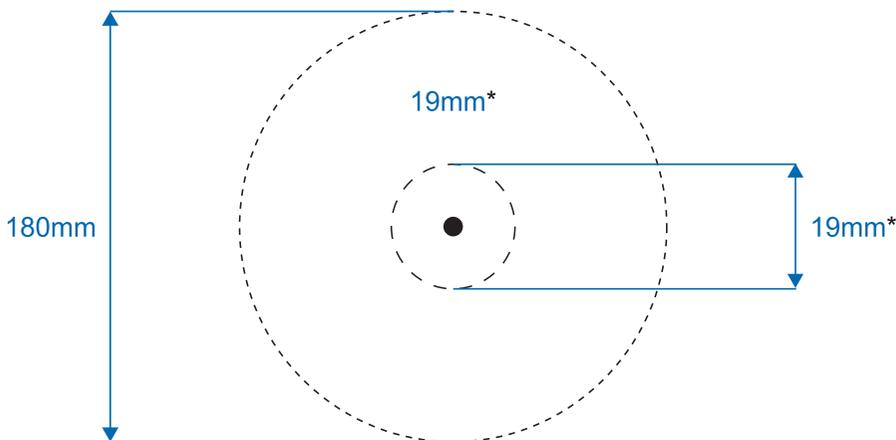
**This antenna does not require a ground plane in order to operate, so may be fitted on a metal or plastic roof panel.**

## Step 1

When the antenna is to be co-located with other antennas or roof mounted equipment, try to achieve a minimum of 30cm (12") clearance around the antenna in order to avoid de-tuning and interference issues. The antenna will fit on a panel up to 9mm (0.35in) thick – an extender kit is supplied for thicker panels.

## Step 2

Mask the panel area around the hole position to protect the paintwork and headliner. Drill a pilot hole, and then either use a hole cutter of correct size or increase the hole diameter to 19mm (or 25mm if using extension bolt), ensuring that drill/cutter bit does not contact the internal headliner. Clean area around the hole, carefully removing all swarf, debris and any grease.



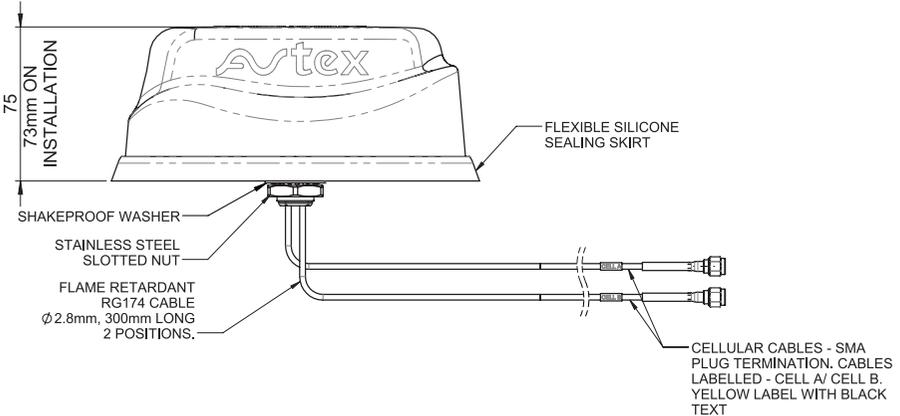
\* 25mm if using extension bolt

## Step 3

The adhesive pad provides a means to affix the antenna and to prevent rotation during installation, it also augments the sealing function of the antenna to the mounting panel provided by the sealing boot – it is recommended that the installation is not carried out in temperatures of less than 50°F (10°C).

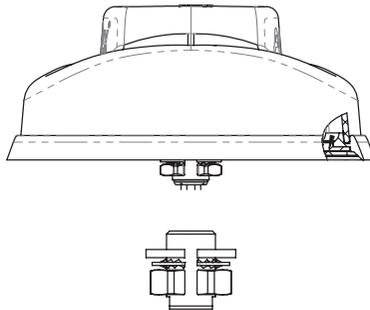
## Step 4

Remove the protective backing from the underside of the antenna and feed the coaxial cables through the panel. Position the antenna over the hole ensuring correct secure location and stick the antenna to the panel by applying firm downward pressure. The antenna can be fixed in any orientation.



## Step 5

If required an extension bolt is supplied which can be fixed over the existing bolt enabling the antenna to be fitted with various panel depths.



## Step 6

A slotted/split nut is provided in order to simplify fitting it over the coaxial cables. When fitting the nut, it is important to ensure that the cables are held centrally whilst the nut is correctly started on the threads. The nut should fit freely by hand and only require a final tighten with a spanner. Assemble the nut and washer from the underside and tighten to a recommended torque of 5Nm (3.6 ft/lbs). Ensure that the sealing boot is properly compressed.

Wherever possible we recommend you test the system **before** installation.

Avtex recommends installation to be carried out by a professional installer.

The antenna can be positioned in any orientation.

The antenna is designed for a permanent installation and under normal circumstances once installed should not be removed.

If preferred some additional silicone can be applied around the base

# Installation Warning

## Routing and terminating coaxial cable(s)

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Connect the extension coaxial cables to the antenna and route the cables to the radio equipment.

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When routing the cables take care to avoid running them adjacent to any existing vehicle wiring or fouling any moving vehicle components. The cables must not be routed in front of any airbag device. Fit the correct coaxial connectors or adapters to the cables as required. If extension cables are needed please contact your retailer.

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## Commission and test

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Check the comms cables:

- Earth continuity: connector body to vehicle ground should measure  $<0.2\Omega$  (where applicable).
  - For LTE elements connector body to centre pin should measure low resistance (elements are DC grounded). WiFi elements should measure open circuit using the same test.
  - Carry out VSWR check – the VSWR on all feeds should meet the specification in product data sheet.
  - Connect the Cellular/LTE and WiFi cables (if applicable) or secure unused pigtails.
- 



**RF Safety Note** – Ensure that the antenna is mounted in such a way that no person is likely to be within a distance of 30cms (12”) from the antenna during use. Ensure that the antenna is used only as supplied. The co-axial cables should not be cut shorter or otherwise modified.

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**General Safety Note** – Make sure that the product is mounted so that it cannot fall and cause injury. Do not chew the product or put it in your mouth. Do not leave children unsupervised with the product or packaging.

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Waste electrical products should not be disposed of with household waste. All electronic products with the WEEE logo must be collected and sent to approved operators for safe disposal or recycling.

Please recycle where facilities exist. Many electrical/electronic equipment retailers facilitate "Distributor Take-Back scheme" for household WEEE. Check with your Local Authority or electronic retailers for designated collection facilities where WEEE can be disposed of for free.

**REACH** (Registration, Evaluation, Authorisation and Restriction of Chemicals, EC 1907/2006). This product contains Lead (CAS No. 7439-92-1) which is classified as an SVHC (Substance of Very High Concern) as being toxic to reproduction under Article 57c. of REACH. **Do not chew parts or put them in mouth, keep away from unsupervised children. Dispose of parts as WEEE waste do not send to landfill.**

## EU Declaration of Conformity (RED)

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**Object Reference:** L45GA

**Object Description:** Low Profile MiMo Antenna with active GNSS Antenna

**Manufacturer:** Avtex, Calon Point, 1 Fountain Lane,  
Cardiff, CF3 0FE, UK

This declaration is issued under the sole responsibility of the manufacturer. The object of the declaration described above is in conformity with the relevant Union Harmonization Legislation below:

Directive 2014/53/EU – Radio Equipment Directive (RED)

Harmonised Standards and References:

EN 301 489-1 (V2.1.1): “Electromagnetic compatibility and Radio spectrum Matters (ERM); Electro Magnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements”.

Referencing EN 61000-4-2:2009 – Electrostatic Discharge Immunity and EN 61000-4-3:2006 +A1:2008 +A2:2010– Radiated RF Immunity

EN 300 440-1 V1.6.1 (2010-08) – Electromagnetic compatibility and radio spectrum matters (ERM); short range devices; radio equipment to be used in the 1GHz to 40GHz frequency range; Part 1: Technical characteristics and Test methods in accordance with EN 300 440-2 V1.4.1 (2010-8) – Electromagnetic compatibility and radio spectrum matters (ERM); short range devices; radio equipment to be used in the 1GHz to 40GHz frequency range.

Low Voltage Directive: Directive 2006/95/EC (Electrical Equipment designed for use within certain voltage limits) of August 2007.

Compliance is declared according to:

EN62368-1: 2014 Audio/video, information and communication technology equipment.

Safety requirements: RoHS 2 compliance is declared per Directive 2011/65/EU and its subsequent amendments with exemption 6.c applied. This product contains lead as an alloying element in a copper alloy containing up to 4% lead by weight.

Avtex’s sole liability for incorrectly certifying a product shall be either replacement of the product or, alternatively and in the sole discretion of Avtex, return of the purchase price paid for the relevant Avtex Antenna product.

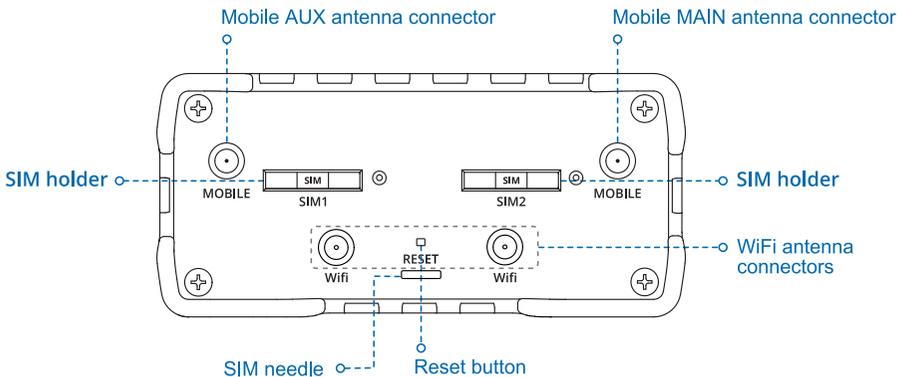
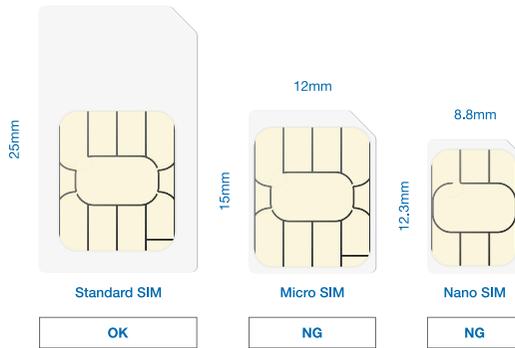
# AMR985 Basic Setup

## Router

### Step 1

After SIM card activation (see details enclosed) please follow below:

- Insert the SIM card into the SIM 1 holder.
- A standard size SIM **must** be used.
- Push the SIM 1\* holder button with the SIM needle
- Pull out the SIM 1\* holder
- Insert your SIM card into the SIM 1\* holder and insert back into AMR985.



\* **Please Note:** Your AMR985 will function fully with only one SIM, but it must be loaded into the SIM 1 slot.

If using 2 SIM cards installation same as above, but use SIM2.

## Step 2

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Attach the antennas as follows.

- Leads from the antenna:
  - Cell A > Mobile main antenna connector
  - Cell B > Mobile AUX antenna connector
- WiFi Stick antennas > WiFi antenna connectors.

Please take care of centre pins when inserting into connectors

## Step 3

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There are 4 mounting holes on the rear of the AMR985 that can be used to fix the unit inside the vehicle in the desired location. Please allow enough room to facilitate all the antennas.

## Step 4

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Connect the power adapter to the socket on the front of the device. Then plug the other end of the power adapter into a power outlet.

Please use the power cables supplied with the product.

## Step 5

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At power up of the AMR985 please always allow 2-3 minutes for the device to fully boot up. See below the indicator lights on the device, both power and signal lights need to be illuminated to acquire service.



## Step 6

The WiFi SSID is the network that will be visible when you search with any compatible WiFi device, the WiFi password is the unique password for your AMR985.

The SSID and password are written on both sides of the AMR985.

(We recommend keeping a confidential record of the password, SSID, IP address, device serial number and password for your reference and logging on extra devices in the future).

**Please Note:** Your AMR985 can have up to 100 separate devices connected at any time, but too many devices logged onto the router can slow down performance and use extra data.



## Smart Device

To connect the AMR985 to any Smart device, iPhone, Android device, iPad etc. Either using the standard WiFi setup in the device's settings menu or by scanning either of the QR codes that can be seen on the AMR985.

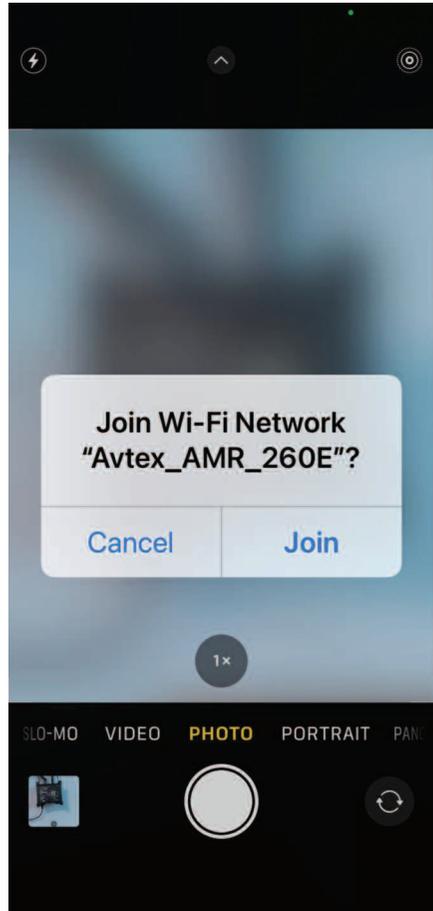
### Step 1

Using the camera on your smart device scan the QR code on the AMR\_985, select the message when it appears on the screen select.



### Step 2

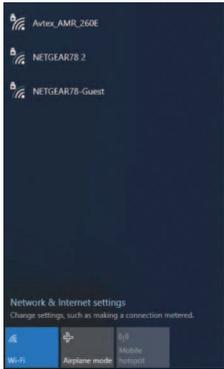
Select join, your device will automatically logon to the AMR\_985 without the need for you to input the device password. Your device will now have internet connection via the AMR985.



# Windows Machine

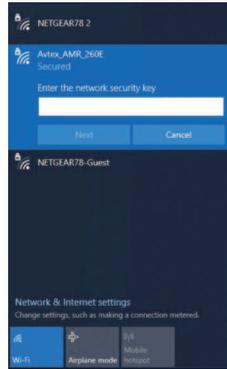
## Step 1

Perform a basic Wi-Fi scan on Windows device.



## Step 3

Input the password from the front of the AMR\_985 and press Next.



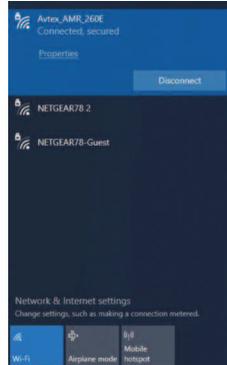
## Step 2

Highlight Avtex AMR\_985\*\*\* and select to connect.



## Step 4

Confirmed connected as standard network connection.



## Connecting Avtex Television

It is recommended wherever possible to use an ethernet cable to connect the AMR985 to your television to fully optimise connectivity.

Below is connection method for wireless connection, both connection methods are also included in your television's instruction manual.

### Step 1

Perform a standard Base station scan within the Network configuration Option on your Avtex Connected TV, look for Avtex\_AMR\_\*\*\*\* highlight and press OK.



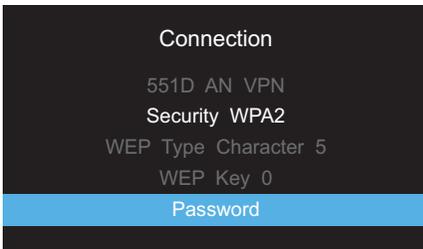
### Step 3

Input the password from the front of the AMR\_985 and press Return (upper/lowercase sensitive), you can use the numerical keys on the remote control to direct enter numbers.



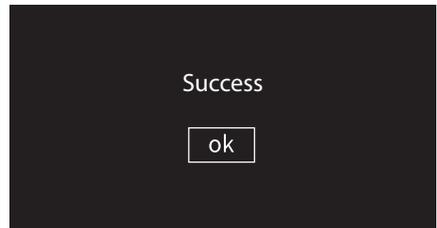
### Step 2

Select Password and press OK.



### Step 4

Wait for the "Success" message, press OK on the remote control and your Avtex Connected Series television will now have network connection.



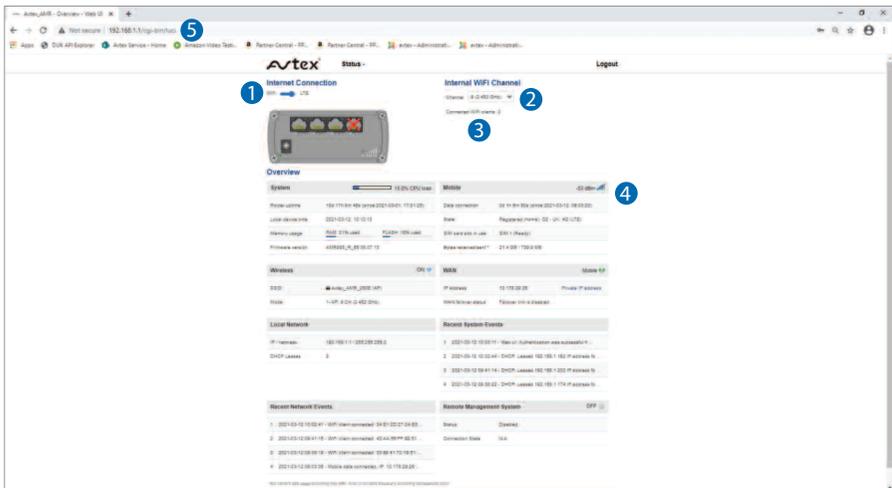
## Accessing Web-interface

Once your SIM card is setup the AMR985 is ready to go and as long as you have sufficient network coverage your devices will be able to access the internet. Wherever possible it is strongly advised to leave all options in the factory default settings.

However, if you need to access any of the top level settings please see below.

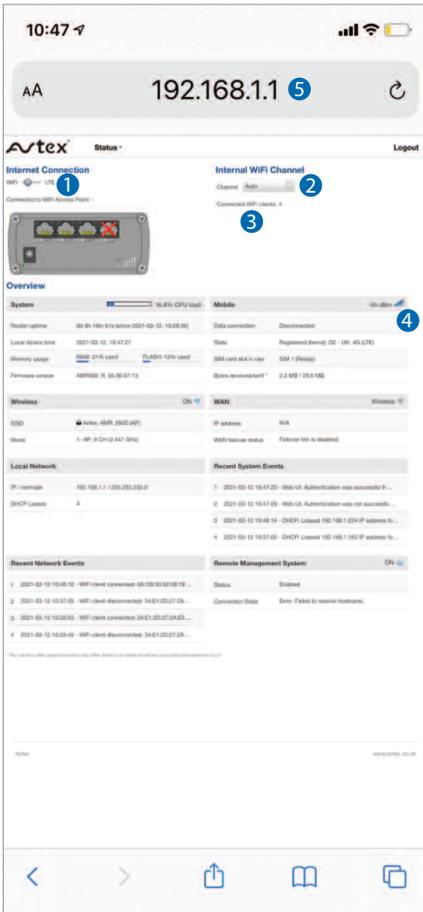
To access the web settings you need to be logged onto the AMR as previously mentioned and then in the browser enter the IP address of the AMR, the IP address is 192.168.1.1. The password is 123456789 It is possible to access this from any web browser on a connected PC/laptop, tablet or smart phone.

You are then presented with a status overview page, where the user can see LTE signal strength, number of devices logged on, a LTE/WiFi toggle switch, channel selector and other status conditions. The IP address and password will also be listed on the device.



- 1 LTE / WiFi Toggle Switch (see page 16)
- 2 Current Channel (drop list to change)
- 3 Number of devices active on AMR985
- 3 Carrier information
- 5 Device IP address

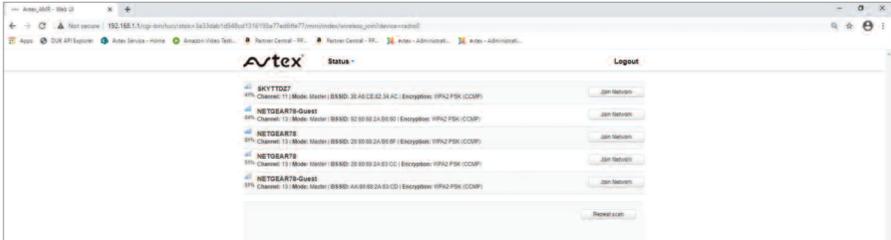
# SMART Device View



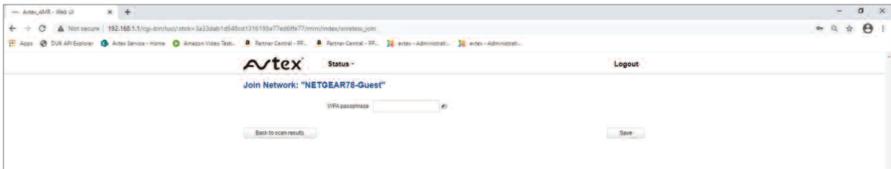
- 1 LTE / WiFi Toggle Switch (see page 16)
- 2 Current Channel (drop list to change)
- 3 Number of devices active on AMR985
- 4 Carrier information
- 5 Device IP address

## LTE / WiFi Toggle

It is strongly advised wherever possible to use a LTE (mobile connection) but the AMR985 can also connect to a local WiFi to create a local access point. To access this feature you will need to connect via the IP address as previously described and activate the toggle switch(1) from LTE to WiFi. The unit will scan for any available networks, please be aware this action can take a few moments to action. When an available network is found you can select Join Network where you will be presented with a password prompt.



Select the wanted WiFi access point and input the password when prompted.



**Please Note:** Accessing any local WiFi may have limited download speeds and each device connected to the AMR will affect the connection speed.

We advise confirming WiFi speed and connectivity by directly connecting using laptop or smart device and confirm download speeds prior to making any changes in the AMR settings menu. You will need the password of any WiFi access point you are connecting to if protected.

The AMR will be connected to the WiFi and your devices need to be connected

to the AMR using usual login procedure as explained previously.

Whenever out of range of the WiFi access point or you have moved locations you will need to "toggle" back to LTE for mobile connection or re-scan for the new local WiFi access point.

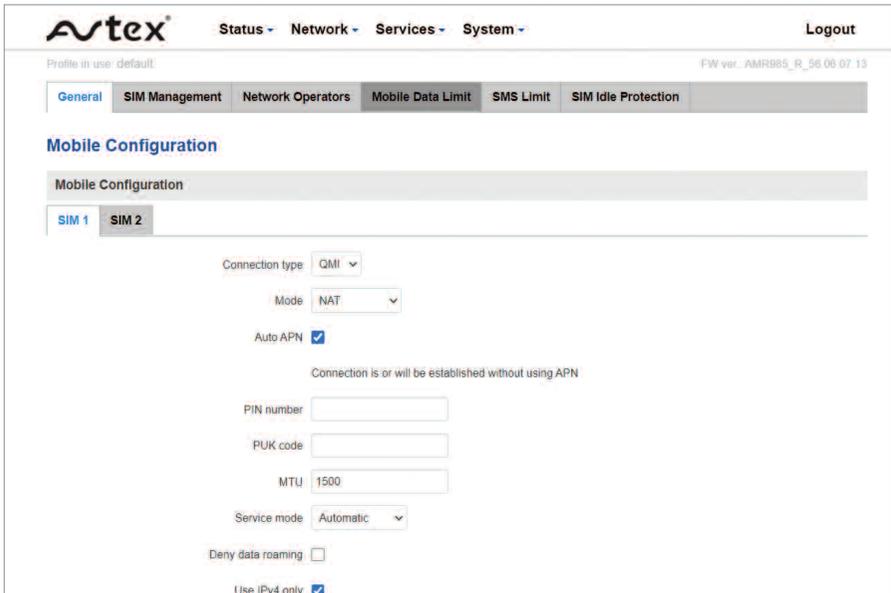
Leaving in LTE mode the AMR will automatically connect whenever a network signal is available. The AMR can only remember the last WiFi access point. Please ensure "Connect automatically" set to 'On' in PC WiFi set up for the Toggle feature to work correctly.

# AMR985 Data Usage Control

It is possible to limit the amount of data used by the AMR985, The **Data Connection Limit Configuration** section is used to configure custom mobile data limits for your SIM card(s). When the mobile data limit set for the SIM card(s) is reached, the router will no longer use the mobile connection to establish a data connection until the limit period is over or the limit is reset by the user.

## Step 1

In the advanced setup menu (password 987654321), select Network > Mobile > Mobile Data Limit.



The screenshot shows the Avtex router's web interface. At the top, there is a navigation menu with 'Status', 'Network', 'Services', and 'System'. The 'Network' menu is expanded, and 'Mobile Data Limit' is selected. The page title is 'Mobile Configuration' and the sub-tab is 'SIM 2'. The configuration options are as follows:

- Connection type: GMI
- Mode: NAT
- Auto APN:
- Connection is or will be established without using APN
- PIN number:
- PUK code:
- MTU: 1500
- Service mode: Automatic
- Deny data roaming:
- Use IPv4 only:

## Step 2

Complete the various options to set as preferred and then press save.

The screenshot shows the Avtex web interface for Mobile Data Limit Configuration. At the top, there is a navigation bar with the Avtex logo and menu items: Status, Network, Services, System, and Logout. Below the navigation bar, there are tabs for General, SIM Management, Network Operators, Mobile Data Limit (selected), SMS Limit, and SIM Idle Protection. The main heading is "Mobile Data Limit Configuration".

Under the heading, there are two tabs: SIM1 and SIM2. Below the tabs is a section titled "Data Connection Limit Configuration". It contains the following fields:

- Enable data connection limit:
- Data limit\* (MB):
- Period: Month (dropdown menu)
- Start day: 1 (dropdown menu)

Below this section is a "Clear Data Limit" section with the following information:

- Data used: N/A
- Data limit: Not set
- Clear data limit:

At the bottom of the page, there is a "Save" button. A small note at the bottom left reads: "\*Important: data limit database is not reset when the functionality is disabled and then re-enabled. Automatically the database is reset at a given Period (month, week, day). If you wish to reset it manually you can hit the 'Clear' button."

## AMR985 Re-boot / Factory Reset

Using the Reset button with the SIM pin if required the AMR985 can be re-booted or totally reset and all settings can be restored to the factory settings, this will reset SSID to original and all passwords to the values listed on the external of the device.



The reset button has two functions

The reset button has two functions:

- **Reboot the device.** If the reset button is pressed for up to 4 seconds, the device will reboot. Start of the reboot will be indicated by the flashing of all 5 signal strength LEDs together with the green connection status LED.
- **Factory reset.** If the reset button is pressed for at least 5 seconds (by default), the device will perform a factory reset and reboot. Signal strength LEDs indicate the elapsed time while holding the reset button. When all 5 LEDs light up, it indicates that 5 seconds have passed and the reset button can be released. Start of the factory reset will be indicated by flashing of all 5 together with a red connection status LED.

After reboot or factory restore allow up to 3 minutes before the AMR985 is once again visible as a WiFi network

It is suggested the router is fully powered down when not in use for a period of time.

# AMR985 Specifications

## 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, SINR, RSRP, RSRQ, 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, EMAIL to SMS, SMS to EMAIL, SMS to HTTP, SMS to SMS, scheduled SMS, SMS autoreply, SMPP

## 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 100 simultaneous connections
Wireless Hotspot .....	Captive portal (Hotspot), internal/external Radius server, built in customizable landing page

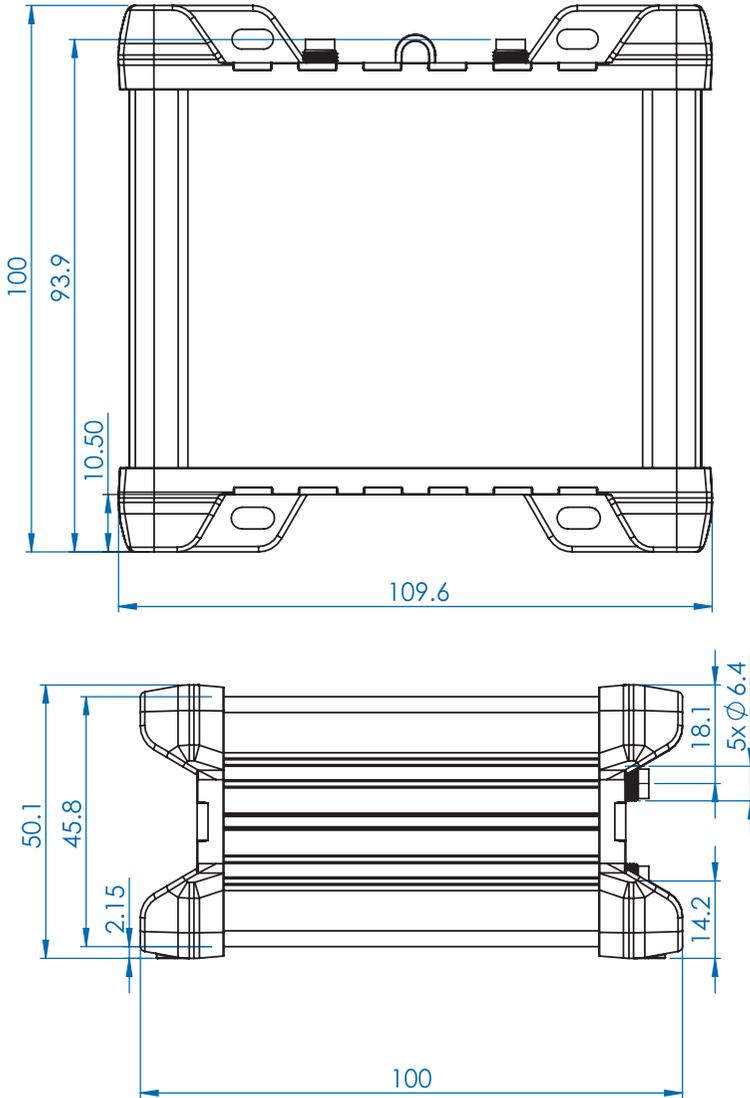
## Power

Connector .....	4 pin industrial DC power socket
Input Voltage Range ...	9 – 30 VDC (4 pin industrial socket), reverse polarity protection; surge protection >31 VDC 10us max
PoE (passive) .....	Passive PoE over spare pairs. Possibility to power up through LAN port, not compatible with IEEE802.3af and 802.3at standards
Power Consumption ...	< 2 W idle, < 7 W Max

## Physical Specification

Dimensions ..... 100 x 110 x 50 mm (L x W x H)

Weight ..... 280g



# Terms and Conditions

**Terms and conditions as regards installation and maintenance of your Avtex AMR-985 Router & 5G Antenna ('AMR-985') (for full terms and conditions see [www.avtex.co.uk](http://www.avtex.co.uk)).**

Your AMR-985 is a rugged design specifically for use on the move and is covered by a limited 1 year parts and workmanship warranty ('warranty'). The router is designed to be maintenance free and the antenna cover need only be gently washed occasionally to maintain optimum signal reception. Please do not remove the antenna cover, use solvents, drive your vehicle through an automated wash nor use a pressure washing device directly on the cover. All of these actions may result in damage and will void the warranty.

Fitting of the antenna is permanent and whilst installation is simple Avtex Limited ('Avtex') recommend it be carried out by a professional installer. Avtex accepts no responsibility for any liability arising directly or indirectly from the installation nor removal of the AMR-985. You should ask your installer for a warranty covering the removal of the antenna in the event of any defect including installation. Only defects relating to the manufacture of or defective parts comprising the AMR-985 as a result of faulty workmanship are covered by the warranty. Specifically excluded is any liability relating to damage to your vehicle or caravan or any part of it arising from, either directly or indirectly from the installation or removal of the AMR-985.

Please register your product within 28 days of purchase at [www.avtex.co.uk/support](http://www.avtex.co.uk/support). In the event of a warranty claim please ensure you retain a proof of purchase as your warranty may be void if proof cannot be provided. Your warranty is not transferrable to a new owner if your vehicle is sold. It is not recommended that the antenna be removed in any event, except in the circumstances of a warranty claim and only then by a professional installer.

Communications technologies are fast changing and whilst we anticipate your product will serve you for its lifetime Avtex cannot be responsible for changes in technology beyond its control or any issues beyond our control howsoever they may arise. For that reason the warranty is limited in that regard and excludes any such issues.

Any problems relating to the SIM card/s in the AMR-985, data usage and signal reception are excluded from the warranty and you should contact your SIM provider.

# Notes

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# Notes

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# avtex®

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MODELL: **AMR985**