

ADL and GDL90 Traffic Receiver Interconnect ADL140/150(B)/160/170/180(B)/190/200

Version 1.00

11.05.2022

1 Version History

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2 Page Index

This manual contains numbered pages 1 to 12.

3 Emergency procedures

If you suspect any malfunction of the ADL device or interference with other aircraft systems, deactivate the device by pulling / deactivating the aircraft circuit breaker for the device or pulling the cigarette lighter plug whichever is applicable. Do not reactivate the device until the problem has been investigated and resolved on the ground.

In case of a generator failure or similar situation requiring electric load shedding, deactivate the ADL device by pulling / deactivating the aircraft circuit breaker for the device or pulling the cigarette lighter plug whichever is applicable.

4 ADS-B Traffic Warning

Some ADL devices come with a non-certified 1090 MHz ADS-B receiver. Not all aircraft is broadcasting 1090 MHz ABS-B and the non-certified nature of the ADL devices means that, due to antenna installation etc., it could miss signals from aircraft broadcasting ADS-B. THEREFORE, NEVER RELY ON THE ADL DEVICE FOR COLLISION AVOIDANCE!

5 General Description

Often pilots will have an ADL device to receive satellite weather data and another device to receive traffic information. Some ADL devices also provide ADS-B traffic data themselves, but can still be enhanced by combining them with other traffic devices.

This manual explain how to run two WiFi enabled devices together. But do not forget there is also the option to connect traffic devices to installed ADL devices (ADL140/150(B)/190/200) via RS232 wire.

Running the ADL and traffic devices together requires two major steps. First you have to bring them into one common WiFi as your iPad etc. will only be able to connect to one WiFi at a time. Second you will have to configure the devices such that certain data is not sent by both devices at the same time or your navigation app might not work as expected.

6 Compatible Devices

All ADL140 and later can be run together with another traffic devices. Older ADL110B/120/130 are unfortunately not compatible. Please make sure you have the latest firmware installed on the ADL device for best results.

Compatible traffic devices must be able to send the so called GDL90 format. Popular options are the Stratux, SkyEcho2, AT1 and many more.

7 Joining the WiFi Networks

We recommend to run the ADL device as a client in the WiFi created by the third party traffic device. But in some cases you could probably run the inverse configuration if desired.

Start up your traffic device and connect the iPad (or iPhone etc.) to the devices WiFi. Got to the general WiFi settings and note those three essential values we will need later on:

WiFi SSID (the name of the Wifi) WiFi Password (or none) Subnet mask (usually 255.255.255.0 but could be different)

23:57 Wed 11 May	✓ 100% 🗲 Wi-Fi
Settings	
Sebastian Golze Apple ID, iCloud, Media & Purchases	Wi-Fi Stratux Unsecured Network r
	NETWORKS $\frac{\lambda_{i}^{k_{e}}}{\lambda_{i}^{k_{e}}}$
Software Update Available 1	Other
Finish Setting Up Your iPad 1	
	Ask to Join Networks Notify >
Airplane Mode	Known networks will be joined automatically. If no known networks are available, you will be notified of available networks.
S Wi-Fi stratux	Auto-Join Hotspot Ask to Join >
Bluetooth Off	Allow this device to automatically discover nearby personal hotspots when no Wi-Fi network
(19) Mobile Data No SIM	is available.
Notifications	
Sounds	
C Focus	
Screen Time	
Figure 1	Connecting to stratux WiEi

Figure 1



23:57 Wed 11 May		1 100% 🦛
	🗙 Wi-Fi st	tratux
Settings	tasks, such as Photos syncing, are paused.	
	Private Wi-Fi Address	
Sebastian Golze Apple ID, iCloud, Media & Purchases	Wi-Fi Address	9C:84:BF:3F:7D:56
	Using a private address helps reduce tracking	g of your iPad across different Wi-Fi networks.
Software Update Available 🛛 🕦 🚿	Limit IP Address Tracking	
Finish Setting Up Your iPad 1	Limit IP address tracking by hiding your IP ad	ldress from known trackers in Mail and Safari.
	IPV4 ADDRESS	
➢ Airplane Mode	Configure IP	Automatic >
ᅙ Wi-Fi stratux	IP Address	192.168.10.19
Bluetooth Off	Subnet Mask	255.255.255.0
۹۰ Mobile Data No SIM	Router	
	DNS	
Notifications	Configure DNS	Automatic >
Sounds		
C Focus	HTTP PROXY	
Screen Time	Configure Proxy	Off >

Figure 2 WiFi details, access this page with the (i) next to the WiFi name

Now start up your ADL device and connect the iPad to the "ADL Connect" WiFi. Remember whatever changes you make to the WiFi configuration, as a fallback the ADL device will always boot up with the ADL Connect WiFi active. Then after 90 seconds it will switch over to your custom configuration. This way you can fix a configuration mistake and are not looked out. If you missed the 90 seconds simply power cycle the ADL device.

23:55 Wed 11 May Settings	Wi-Fi	100% 4
Sebastian Golze Apple ID, iCloud, Media & Purchases	Wi-Fi ADL Connect Unsecured Network – Low Data Mode	▼ ()
Software Update Available 1 Finish Setting Up Your iPad 1	NETWORKS $\frac{1}{2}$	
Airplane Mode Wi-Fi ADL Connect	Ask to Join Networks Known networks will be joined automatically. If no known netwo notified of available networks.	Notify >
Bluetooth Off (1) Mobile Data No SIM	Auto-Join Hotspot Allow this device to automatically discover nearby personal hot is available.	Ask to Join >
 Notifications Sounds Focus 		
Screen Time		

Figure 3

Connecting to the ADL Connect WiFi

Open the ADLConnect app and when properly connected got to the Config page. Enter the values we recorded above in those fields:

WiFi Mode: "Client"

WiFi SSID: as recorded above (upper and lower case matters) WiFi Password:as recorded above (upper and lower case matters)

If no password is used simply leave this field empty (make sure it is really empty) WiFi Subnetmask: as recorded above

Now press "Save and Reboot ADL"

The ADL device will reboot and the 90 second cycle will start. If you wish you can connect to the ADL Connect WiFi and verify the status messages at the bottom of the "Update WX" page.

Connect your iPad to the traffic device WiFi. Open the ADLConnect app and wait for it to detect your ADL device. Remember this will take 90 seconds. Now you should be able to use your ADL device as usual just that you connected to it using the WiFi provided by the traffic device.

23:59 Wed 11 May	Iridium al GPS all			11.05	.2022 21:59 UTC	1 100% 💋
Expert Config		System Config	guration		Load Sa	mple Data
Hardware Configura	tion					
UAT FIS-B						
	ADL140/1	50(B)/180B/190/200	Only			
RS232 Baud Rate						
WiFi GDL90	Active (Default)	Inactive	Custom			
	ForeFlight SkyDe	mon Garmin	SkyMap			
WiFi Mode	Access Point (Default)	Client	Custom Access Point			
WiFi SSID	stratux					
WiFi Password						
WiFi Subnetmask	- + 255.255	5.255.0				
WiFi Channel	Default Custo	m Access Point only				
	Save and Reboot A	DL Can	cel Changes			
		F Y	UPDATE WX	MSG		IG

Figure 4 Configure the ADL device as a WiFi client

00:03 Thu 12 May	Iridium	GPS .ull	• • •		11.05.2022	22:03 UTC	1 100% 💋
			Weather D	ownload		Update WX	(Internet
FPL Corridor		LFLG ED g on right side of N	AZ (1067NM) /OVING MAP page)				
Wind / Temps		+ FL50	- FL26	0 – +			
METAR + TAF (ICAO	Codes, m	nax 8)	Copy ICAO C	codes from FPL			
			_				
Single Iridi	um Downl	load A	utomatic Iridiun	n Downloads			
ADL System Mess	ages						
00:00 ADSB 5894 boot 00:00 Firmware v9.02 (00:00 ADL 3005340621 00:00 AHRS NXP booti 22:00 WiFi ADL Conne 22:00 Joining WiFi stra 22:00 AHRS Gyros stal 22:01 Joining WiFi stra 22:02 Iridium first full s	05.05.2022 57270 boot ng ct booting atux in 90s bilized atux now	ting					
	P		AF	UPDATE WX	MSG		G

Figure 5 ADL boot up sequence with 90 second delay until stratux WiFi is joined

10:31 Thu 12 May	Iridium 📶 GPS all 4G all	000	12.05.2022 08	:31 UTC 🕈 100% 🜠
Expert Config		System Configuration		Load Sample Data
System Status	I:0 G:4 4G:5			
Current WiFi	stratux			
Current IP	192.168.10.19			
App Version	v9.03 06.05.2022			
Device Firmware	v9.02 05.05.2022			
IMEI	300534061650050			
Device Type	ADL200			
Cell Operator	26203			
Time UTC	12.05.2022 08:31 UTC			
Latitude	52.531465 N			
Longitude	13.339931 E			
Altitude	116 ft			
Groundspeed	0 kt			
True Track	114 °			
	Ğ ─″ METAR/TAF	UPDATE WX	MSG d	

Figure 6 ADL200 device running as a client in the stratux WiFi

8 Configuring the GDL90 Data Stream

Frist make sure your traffic device is really broadcasting GDL90 traffic data. For some devices like the Stratux this is always the case while others like the AT1 might have to be reconfigured.

Then connect to the traffic device WiFi, open the ADLConnect app and wait until it connects to the ADL device. On the Config page you can now set up the GDL90 data stream. We suggest you select:

WiFi GDL90: "Custom"

Below you can select which data is actually sent out by the ADL device. The fields are: HB – heartbeat

GPS – GPS data

AI – AHRS / attitude data if your ADL device is equipped (ADL180(B)/190/200)

TF – Traffic data if any is available to the ADL device (internal or RS232 wired sources) WX –Weather data

We recommend that you usually select AI, TF and WX only. Sending the heartbeat and GPS in parallel to similar data sent from the traffic device usually confuses the navigation app. In some instances you might also deactivate AI and / or TF if this data might be redundant to capabilities of your traffic device.

Below you can adapt the GDL90 data stream to your target application. This makes slight adjustments to the data format based on your favorite navigation app.

00:03 Thu 12 May	Iridium 📶 GPS 📶			11.05.2022 22:03 UTC	100% 💋
Expert Config		System Configurat	tion	Load Sa	mple Data
Hardware Configura	ition				
UAT FIS-B					
	ADL140/1	50(B)/180B/190/200 Only	g Carmin Full		
RS232 Baud Rate					
WiFi GDL90	Active (Default)	Inactive	Custom		
	HB GPS	AI TF) wx 🌔		
	ForeFlight SkyDe	mon Garmin	SkyMap		
WiFi Mode	Access Point (Default)	Client Cust	om Access Point		
WiFi SSID	stratux				
WiFi Password					
WiFi Subnetmask	- + 255.255	5.255.0			
WiFi Channel	Default Custo	m Access Point only			
	Save and Reboot A	DL Cancel (Changes		
	• METAR/TA	F VPD/	ATE WX M	SG 🤔 CON	FIG
	Figure 7	WiFi GDL9	0 Configuratio	n	

Once you made your choices, press "Save and Reboot ADL" below.

9 Testing

Wait until everything is up and running. Now you should now be able to display weather data (and in some cases ADL based traffic) in parallel to the traffic data provided by your traffic device. If in doubt on how to display the GDL90 data in your favorite app, please look up the separate manuals we have for each major navigation app.



Figure 8 ForeFlight connected to stratux and ADL200 (note only stratux is displayed in this configuration)



Figure 9 ADL200 weather data and stratux traffic displayed in ForeFlight



Figure 10 ADL200 weather data and stratux traffic displayed in SkyDemon



Figure 11 ADL200 weather data and stratux traffic displayed in Garmin Pilot

10 Contact

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