

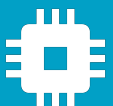


Subsystems for the
UAS intergration into
the airspace

Dual-Band Receiver Station A/F/U/R versions



Data sheet & User manual



Introduction

The **DRS-1** is a high performance receiver station for direct installation on the antenna. It can simultaneously process ADS-B (1090MHz), FLARM(868MHz, 915MHz), UAT(978MHz) or RemotID with BLE(2400MHz) and Wi-Fi(2400MHz) signals, offering excellent input sensitivity. The new generation multi-GNSS receiver implemented, supports four satellite constellations simultaneously for precise position and timestamp.

The **DRS-1** station is in an IP67 weatherproof enclosure, with power and data provided by a single Power-over-Ethernet (POE) network cable connected to your LAN. **DRS-1** can be ordered separately or with the recommended antenna and network cable with a maximum length of up to 100m.

NOTE: The device to operate on FLARM frequency requires FLARM UAS license. The license can be obtained with the device from Aerobits upon purchase. FLARM library expire after year and must be updated with latest firmware.

NOTE: When selecting DRS-1 with FLARM, pay attention to your country's ISM band and choose the appropriate 868 MHz(will operate in Europe, Asia (except Israel), Africa, and New Zealand) or 915 MHz(will operate in North America, South America, Israel, and Australia.) variant.

Features

- DRS-1A - ADS-B and GNSS
- DRS-1F-868 - ADS-B, FLARM and GNSS
- DRS-1F-915 - ADS-B, FLARM and GNSS
- DRS-1U - ADS-B, UAT and GNSS
- DRS-1R - RemotID (BLE, Wi-Fi) and GNSS

Applications

- Airports and critical infrastructure
- Nationwide traffic management systems (manned and unmanned)
- Perfect solution for local airfields
- U-Space and UTM systems
- Ground Network air traffic surveillance systems
- Network based Remote Identification (central monitoring)

For more information please contact: support@aerobits.pl.

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1 Technical parameters

1.1 Basic technical information

Parameter	Description	Typ.	Unit
ADS-B (1090MHz)	Input sensitivity	-95	dBm
FLARM (868MHz, 915MHz)	Input sensitivity	-110	dBm
UAT (978MHz)	Input sensitivity	-110	dBm
BLE (2400MHz)	Input sensitivity	-103	dBm
Wi-Fi (2400MHz)	Input sensitivity	-103	dBm
GPS, QZSS , GLONASS, BeiDou, Galileo	Input sensitivity	-167	dBm
Power-over-Ethernet (PoE, RJ45)	Voltage range	36 -57	V
	Current	350	mA
Network cable	Length up to	100	m

Table 1: General technical parameters.

1.2 Electrical specification

1.2.1 Power supply

Parameter	Value
Power connector	PXP6033TP 6000 Series Buccaneer® (power supply and data transfer)
Power consumption	20 W (with 100m cable length)
Power supply	100 - 240 VAC, PoE supply unit with PXP6034 6000 Series Buccaneer®

Table 2: Power supply of DRS-1

1.3 Mechanical specification

1.3.1 Mechanical parameters

Parameter	Value
Dimensions	225.0 x 53.5 x ϕ 32.0 mm
Weight	500g
Antenna length example (LAIRD OF86315)	713.2 mm

Table 3: Mechanical parameters of DRS-1

1.4 Dimensions (in mm)

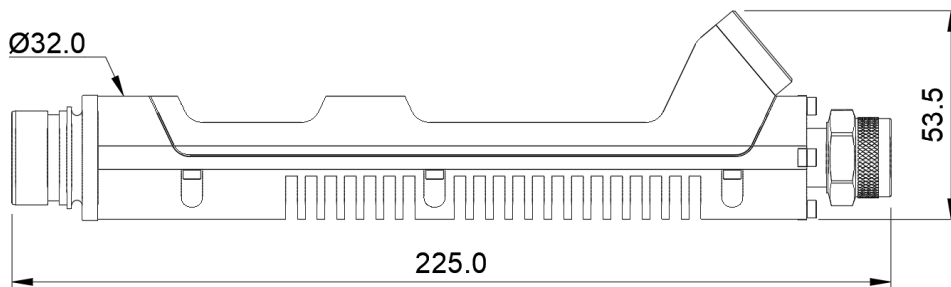


Figure 1: Dimensions of DRS-1F.

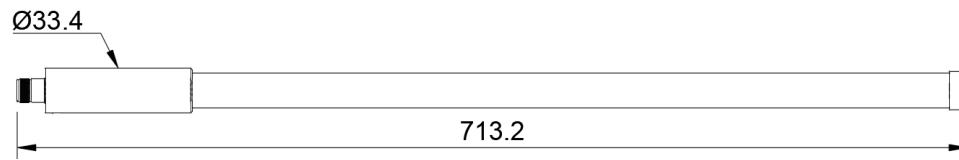


Figure 2: Dimensions of recommended antenna for ADS-B LAIRD OF86315.

2 Settings and Protocols

2.1 Available settings and protocols for DRS-1

Visit our website for more information on module DRS-1. Download the latest documentation (at the bottom of the page). Link to all versions below:

- DRS-1A - Link to installed OEM module [Aerobits TT-SG1](#)
- DRS-1F - Link to installed OEM module [Aerobits TT-SF2](#)
- DRS-1U - Link to installed OEM module [Aerobits TT-SU2](#)
- DRS-1R - Link to installed OEM module [Aerobits TT-RW1](#)

3 Quick start

3.1 Scope of delivery

1. Dual-band receiver station
2. Omnidirectional antenna (optional)
3. Small assembly parts (with antenna)
4. Power Supply cables (optional)
5. PoE Converter (optional)

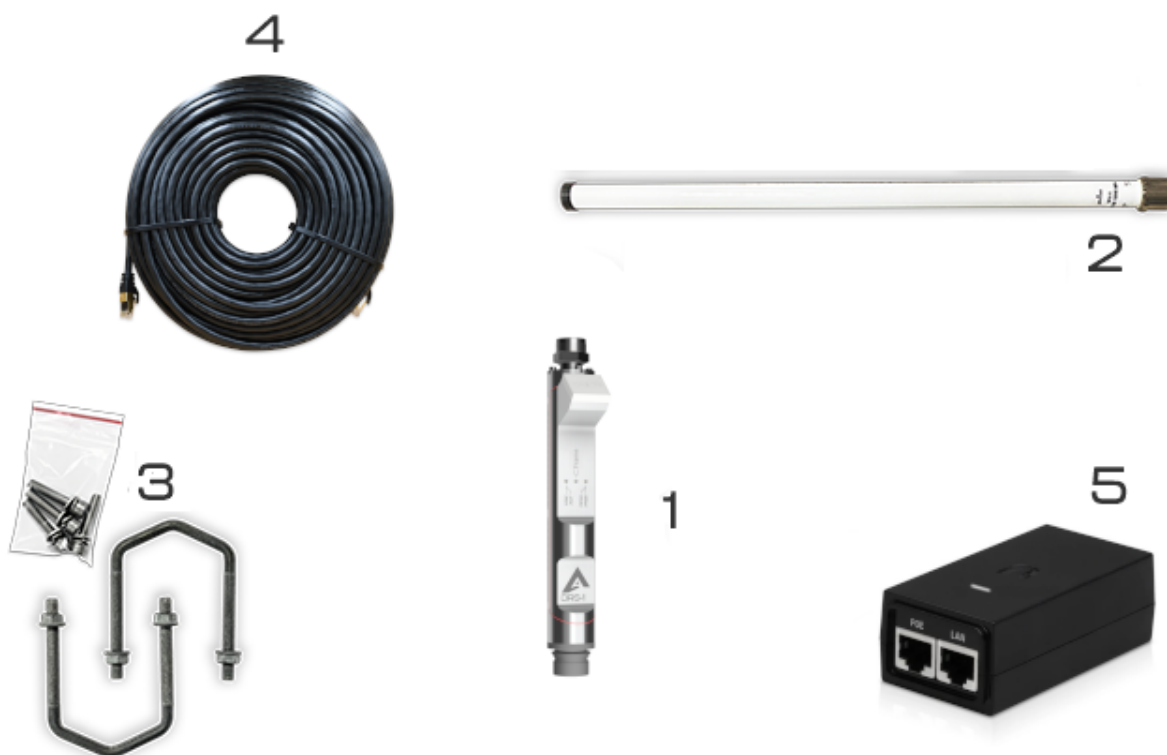


Figure 3: DRS-1 equipment kit

3.2 Installation process

3.2.1 Mounting

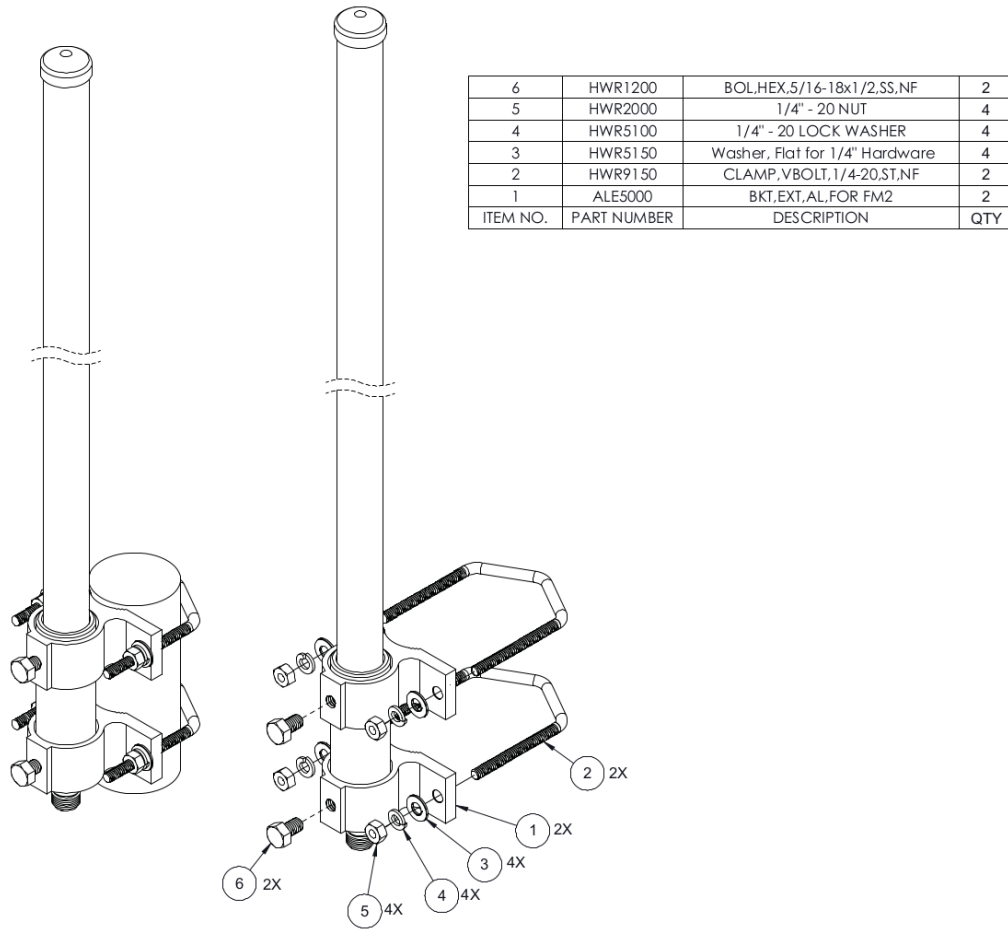


Figure 4: DRS-1 antenna mounting process

3.2.2 Connectors



Figure 5: DRS-1 outlets

1. POW - Ethernet RJ45
2. ANT - N male connector

3.2.3 Electrical connection.

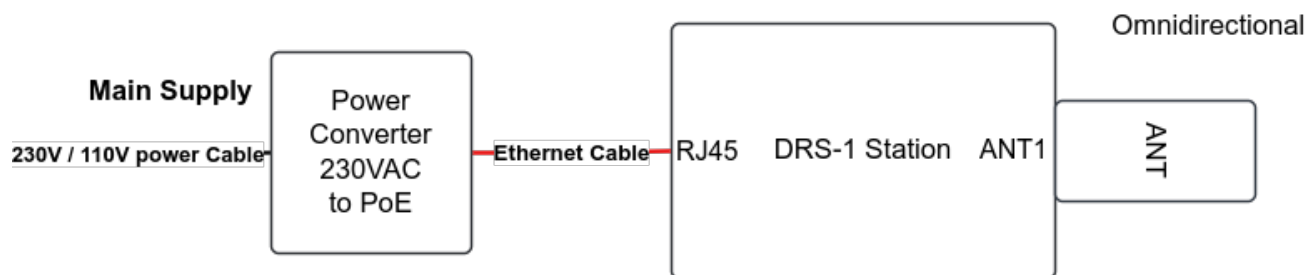


Figure 6: DRS-1 electrical diagram

3.3 Software configuration

3.3.1 Connection using user interface

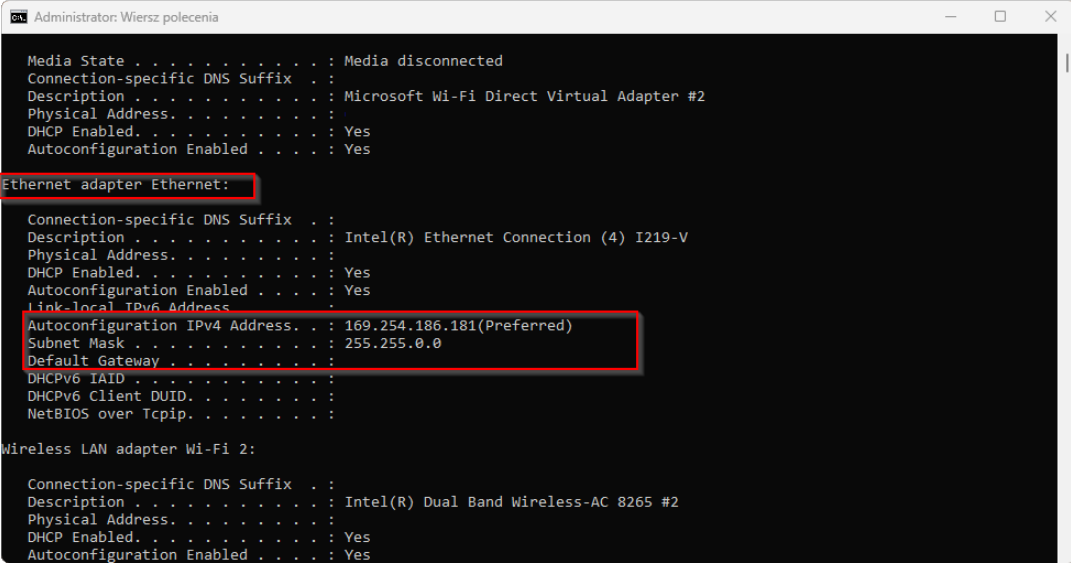
Connect station in local network, find its IPv4 Gateway address and Subnet mask. On Windows open cmd as admin and type:

```
ipconfig /all
```

or for Linux:

```
ifconfig
```

and search your Ethernet adapter settings (connected to DRS-1) just like below:



```
Administrator: Wiersz polecenia
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . . . . . :
Description . . . . . : Microsoft Wi-Fi Direct Virtual Adapter #2
Physical Address. . . . . :
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes

Ethernet adapter Ethernet:

Connection-specific DNS Suffix . . . . . :
Description . . . . . : Intel(R) Ethernet Connection (4) I219-V
Physical Address. . . . . :
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes
Link-local IPv6 Address . . . . . :
Autoconfiguration IPv4 Address. . . . . : 169.254.186.181(Preferred)
Subnet Mask . . . . . : 255.255.0.0
Default Gateway . . . . . :
DHCPv6 IAID . . . . . :
DHCPv6 Client DUID. . . . . :
NetBIOS over Tcpip. . . . . :

Wireless LAN adapter Wi-Fi 2:

Connection-specific DNS Suffix . . . . . :
Description . . . . . : Intel(R) Dual Band Wireless-AC 8265 #2
Physical Address. . . . . :
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes
```

- **IP:** 169.254.186.181
- **Subnet Mask:** 255.255.0.0

Example connection shown below:

1. Download [Net Module Configure](#) (only for Windows)
2. Run Net Module Configure app and search device.
3. Go to Basic section and setup all fields according to your Ethernet IPv4 settings. For example:

Net Module Configure

Adapter: 1. Intel(R) Ethernet Connection Refresh

Module List(Double Click to get configuration)

Name	IP	MAC	Ver

Search

Reset Load Config Save Config

Basic

Name: (?)

DHCP: On (?)

IP: . . . (?)

Mask: . . . (?)

GateWay: . . . (?)

Serial Nego: On (?)

Port 1

Mode: TCP SERVER (?)

Local Port: Random 0 (?)

Conn Type: IP (?)

Dest IP: . . . (?)

Dest Port: 0 (?)

Baud: (?)

Data Bit: (?)

Stop Bit: (?)

Parity: (?)

Conn Lost: Close Conn (?)

Pack Len: 0 (<=1024) (?)

Pack TimeOut: 0 (10ms) (?)

Reconnect: Clear Buff (?)

Set ALL

Operation Status:

Net Module Configure

Adapter: 1. Intel(R) Ethernet Connection Refresh

Module List(Double Click to get configuration)

Name	IP	MAC	Ver
CH9121	169.254.186...	50:54:7B:B5:0E:5A	41

Search

Reset Load Config Save Config

Basic

Name: CH9121 (?)

DHCP: On (?)

IP: 169 . 254 . 186 . 200 (?)

Mask: 255 . 255 . 0 . 0 (?)

GateWay: 169 . 254 . 186 . 1 (?)

Serial Nego: On (?)

Enable Port2

Port 1

Mode: TCP SERVER (?)

Local Port: Random 2000 (?)

Conn Type: IP (?)

Dest IP: 192 . 168 . 1 . 100 (?)

Dest Port: 1000 (?)

Baud: 115200 (?)

Data Bit: 8 (?)

Stop Bit: 1 (?)

Parity: None (?)

Conn Lost: Close Conn (?)

Pack Len: 1024 (<=1024) (?)

Pack TimeOut: 0 (10ms) (?)

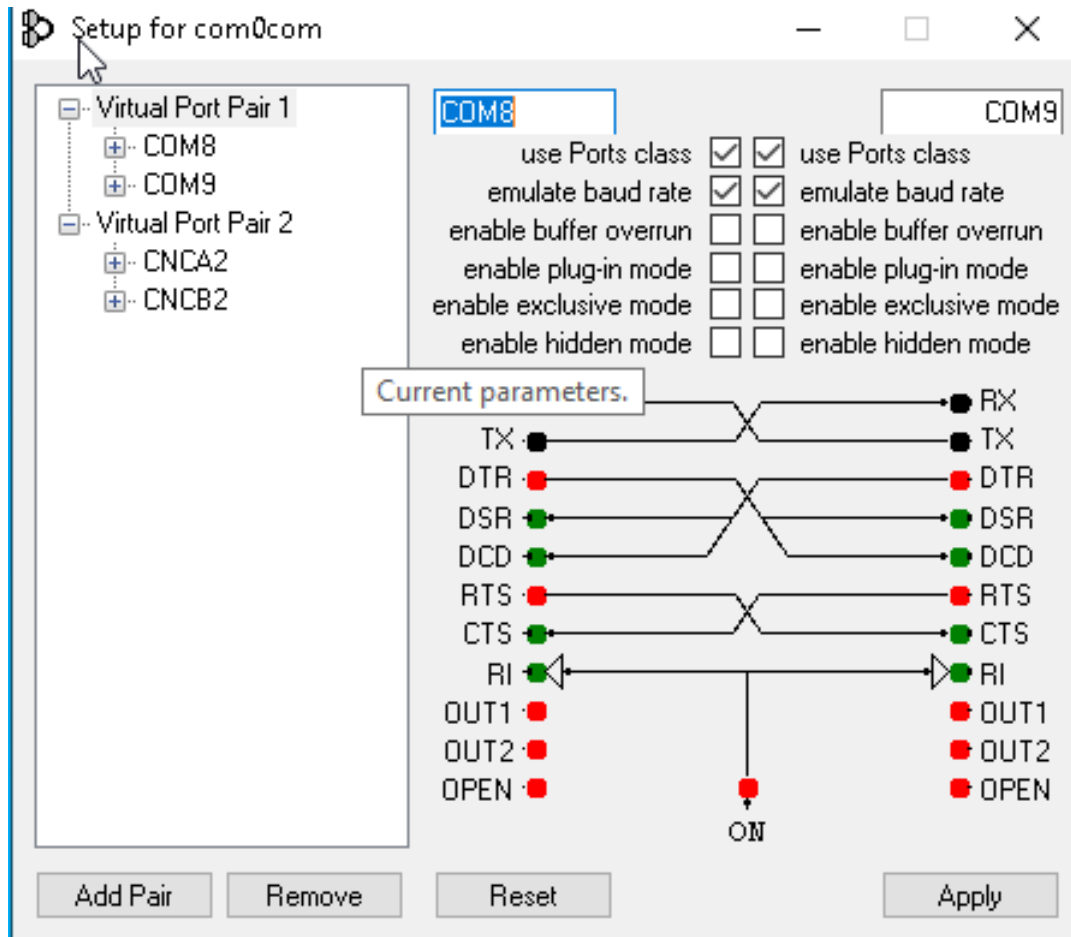
Reconnect: Clear Buff (?)

Set ALL

Operation Status: Get Config Success!

4. After configuration save all parameters by push Set ALL button. Module DRS-1is ready to work.

5. Working on Windows we recommend download [Com0Com Virtual Serial Port](#) to create virtual serial port pair.



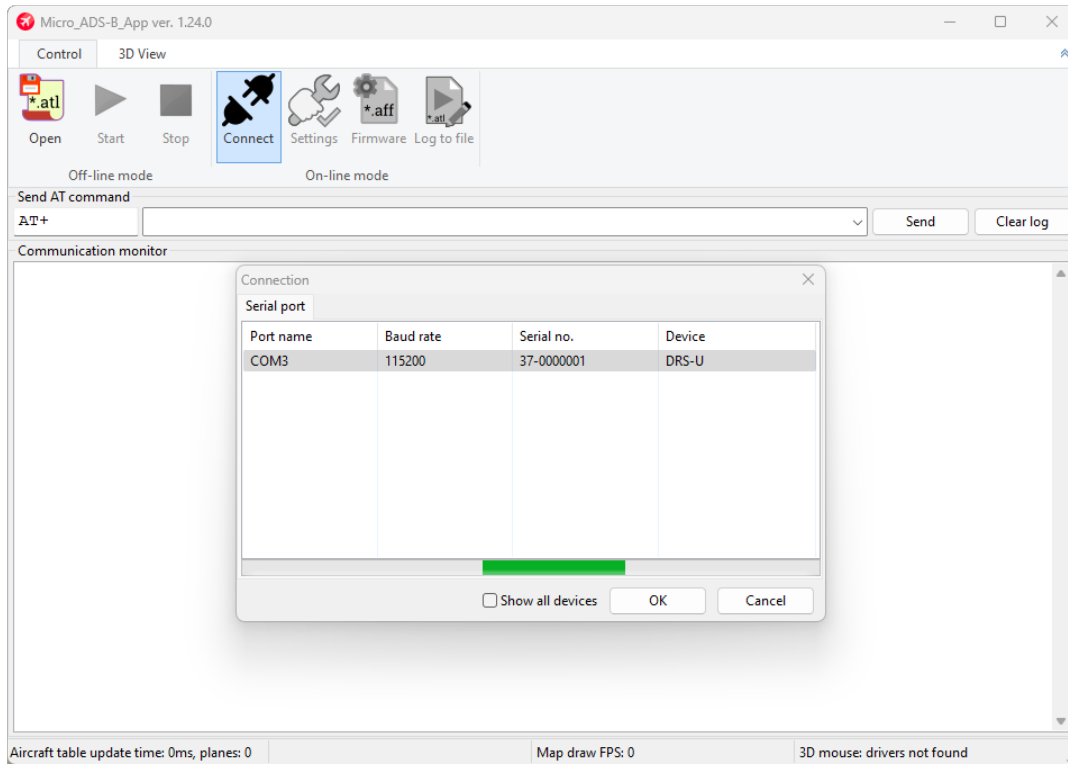
6. Now for redirect TCP on UART download [socat Windows](#), run app via PowerShell and redirect TCP to previously created COM port pair. For example to COM8, use /dev/ttyS8 port instead normal COM (socat need Linux based port name):

```
./socat -d -d -d /dev/ttyS8,b115200,rawer TCP4:169.254.186.200:2000
```

7. Working on Linux download socat and redirect TCP to virtual comport:

```
socat pty,link=/tmp/ttyV0,b115200,raw,echo=0 tcp:192.168.1.15:2000
```

8. For verification run MicroADS-B app and connect device or run any other serial communication app.



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