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AirLink

AirLink Telemetry Protocol 3.1

Specification

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Revision History

Revision number	Release date	Changes
1	March 27, 2024	First release

Contents

AirLink Telemetry Protocol Specification

Introduction

This document provides details on the data points and data format used to collect vehicle telemetry data from AirLink OS-based AirLink routers. It is anticipated that AirLink Telemetry Protocol (ATP) can be transported over different transport layers, depending on the requirements of the user. The current implementation of ATP uses JSON over MQTT, so as to be compatible with AirLink Management Service (ALMS). The data formats outlined in this document are expressed as JSON constructs.

Note that the format of the data sent to ALMS is not exactly the same as the data being sent over MQTT. The only shared elements between the MQTT payload for 3rd party servers and the LWM2M payload for ALMS are the ATP data point IDs and the values that are reported along with each ID.

Note: This page in the ALMS User Guide has information and links to resources for configuring AirLink OS-based routers for telemetry and reporting.

Notes:

- ATP 3.1 data points are reported in AirLink OS 5.0. They are not compatible with the AirVantage Telemetry Application or ALEOS Application Framework.
- The ordering of data points within the proposed data point format is not guaranteed; each data point within a package may appear in any order.
- Potential rounding errors (off by 1 unit) may occur. Rounding errors can occur because of a combination of the following factors:
  - ATP data point units may differ from the units that are defined by the data source. For example, atp.odo (vehicle odometer) is specified to report the value in miles (imperial unit). Vehicle odometer readings from the CAN Bus and J1979 protocol (light duty vehicle) and J1939 protocol (heavy duty vehicle) are in kilometers (metric unit).
  - Most ATP data point definitions specify that values are reported as integer values. For example, atp.odo (vehicle odometer) is specified to report an integer value in miles. Conversions may introduce rounding error when translating back and forth between units.
    - Odometer reading from CAN Bus = 6734 kilometers
    - atp.odo reports an integer value in miles: 6734 kilometers = 4184.314 miles. atp.odo = 4184 miles.
    - If the receiver of atp.odo (an ALMS report, for example) converts the value back into kilometers, 4184 miles = 6733.5204 kilometers, which becomes 6733 kilometers if round down is applied.

The following tables list the data points in the protocol.

Data Point Format

There are three formats for MQTT Reports, each with a different timestamp[1] format:

- Individual Timestamp
- Report Timestamp
- Report and Individual Timestamp

You can configure the timestamp format in the MQTT menu AirLink OS. The MQTT menu does not appear by default, but will appear when any defined reports use MQTT as the report mode.

1. Timestamps are reported as UNIX epoch time.

You can view the menu in one of two ways:

1. Go to Services > Telemetry > Vehicle Behavior Reports.

> *Note: Vehicle Behavior Reports are available only on AirLink XR80 and XR90 routers.*

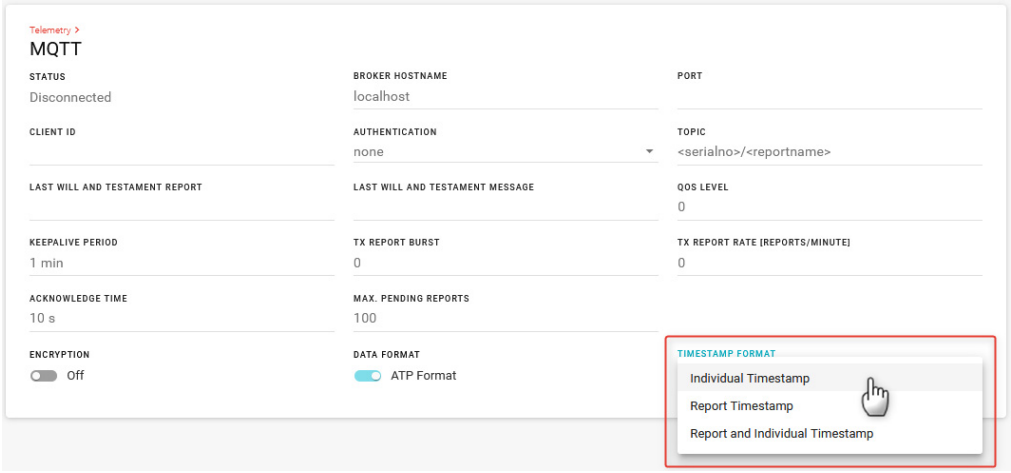
2. Under REPORT MODE, select **MQTT** or **ALMS and MQTT**.

-or-

1. Go to Services > Telemetry > Custom Reports.
2. Create or edit a Custom Report.
3. Under REPORT MODE, select **MQTT** or **ALMS and MQTT**.

To configure the timestamp format after you have enabled the MQTT menu:

1. Go to Services > Telemetry > MQTT.
2. Under TIMESTAMP FORMAT, select the desired format.



Individual Timestamp

Individual timestamps represent the time when a data point was captured. The format for an MQTT Telemetry report with n data points is shown below.

```
<MQTT Topic> {
"atp.item_1" : { "t" : 1234567 : "v" : <value_1> },
"atp.item_2" : { "t" : 3334444 : "v" : <value_2> },
"atp.item_3" : { "t" : 3334444 : "v" : <value_3> },
"atp.item_n" : { "t" : 3334444 : "v" : <value_n> }
}
```

- The timestamp for atp.item_1 is 1234567
- The timestamp for atp.item_2 is 3334444
- The timestamp for atp.item_3 is also 3334444
- The timestamp for atp.item_n is also 3334444

Below is an example from real-world testing:

```
6Q0221004202AB14/test {
"atp.gfixcur" : { "t" : 1671826667.608, "v" : 0 },
"atp.ghed" : { "t" : 1671826667.608, "v" : 222 },
"atp.glat" : { "t" : 1671826667.608, "v" : 49.17232058333333 },
"atp.glon" : { "t" : 1671826667.608, "v" : -123.07033175 },
"atp.gpi" :  { "t" : 1671826667.608, "v" : 0 }
}
```

Report Timestamp

In Report Timestamp mode, the single timestamp “ts” represents the time at which the report was generated. The format for an MQTT Telemetry report with n data points is shown below.

```
<MQTT Topic> {
"atp.item_1" : { "v" : <value_1> },
"atp.item_2" : { "v" : <value_2> },
"atp.item_3" : { "v" : <value_3> },
"atp.item_n" : { "v" : <value_n> },
"ts" : 1234567
}
```

Below is an example from real-world testing:

```
6Q0221004202AB14/test {
"atp.gfixcur" : { "v" : 0 },
"atp.ghed" : { "v" : 222 },
"atp.glat" : { "v" : 49.17232058333333 },
"atp.glon" : { "v" : -123.07033175 },
"atp.gpi" : { "v" : 0 },
"ts" : 1671826667.608
}
```

Report and Individual Timestamp

The format for an MQTT Telemetry report with n data points is shown below.

```
<MQTT Topic> {
"atp.item_1" : { "t" : 1234567 : "v" : <value_1> },
"atp.item_2" : { "t" : 3334444 : "v" : <value_2> },
"atp.item_3" : { "t" : 3334444 : "v" : <value_3> },
"atp.item_n" : { "t" : 3334444 : "v" : <value_n> },
"ts" : 1234567
}
```

Below is an example from real-world testing:

```
6Q0221004202AB14/test {
"atp.gfixcur" : { "t" : 1671826667.608, "v" : 0 },
"atp.ghed" : { "t" : 1671826667.608, "v" : 222 },
"atp.glat" : { "t" : 1671826667.608, "v" : 49.17232058333333 },
"atp.glon" : { "t" : 1671826667.608, "v" : -123.07033175 },
"atp.gpi" : { "t" : 1671826667.608, "v" : 0 }
"ts" : 1671826667.608
}
```

Enabling Report Truncation

If the router is configured to send reports to third-party MQTT servers, you can strip out the *atp.* portion of each data point with a setting in AirLink OS to reduce the amount of data sent to your server. After enabling truncation, data points in reports will appear as shown below:

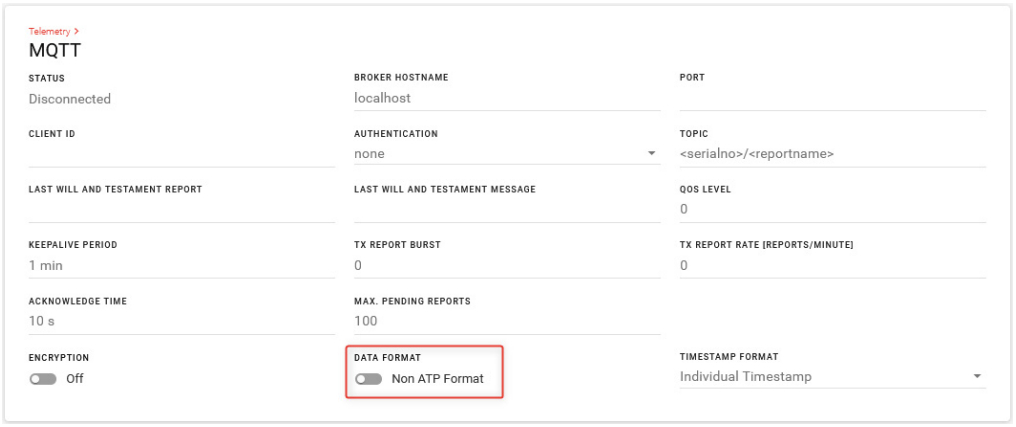
```
<MQTT Topic> {
"item_1" : { "t" : 1234567 : "v" : <value_1> },
"item_2" : { "t" : 3334444 : "v" : <value_2> },
"item_3" : { "t" : 3334444 : "v" : <value_3> },
"item_n" : { "t" : 3334444 : "v" : <value_n> }
}
```

Below is an example of report truncation you might see in real-world testing:

```
6Q0221004202AB14/test {
"gfixcur" : { "t" : 1671826667.608, "v" : 0 },
"ghed" : { "t" : 1671826667.608, "v" : 222 },
"glat" : { "t" : 1671826667.608, "v" : 49.17232058333333 },
"glon" : { "t" : 1671826667.608, "v" : -123.07033175 },
"gpi" : { "t" : 1671826667.608, "v" : 0 }
"ts" : 1671826667.608
}
```

To enable report truncation in AirLink OS:

1. If the MQTT settings menu under Services > Telemetry > MQTT is not visible, you must enable it. See Data Point Format on page 5.
2. Go to Services > Telemetry > MQTT.
3. Under DATA FORMAT, click the switch to change it to **Non ATP Format**.



Data Points in ATP 3.1

Data Point Name in AirLink OS	Data Point ID	Units/Threshold/Peak/Duration/Units	Description
Location			
GPS Fix Status	atp.gfixcur	Binary: 0= fix received is not current 1=fix received is current	Fix status, automatically included in any report with location fix attributes and GNSS items. ▪ Not user selectable ▪ Only applies to MQTT reports ▪ Automatically included when an MQTT report contains any of the following items: ▪ atp.glat ▪ atp.glon ▪ atp.galt ▪ atp.gspd ▪ atp.ghed ▪ atp.gqi ▪ atp.ghdop ▪ atp.gsat
Latitude	atp.glat	Decimal degrees	Location latitude via GPS. Included with a number of events to indicate location at which event occurred
Longitude	atp.glon	Decimal degrees	Location longitude via GPS. Included with a number of events to indicate location at which event occurred.
Altitude	atp.galt	Meters	Meters above sea level
Heading	atp.ghed	Decimal degrees	Heading via GPS. Included with a number of events to indicate current heading when event occurred.
GNSS Speed	atp.gspd	Kilometers per Hour	Speed as reported by GPS.

Data Point Name in AirLink OS	Data Point ID	Units/Threshold/Peak/Duration/Units	Description
GNSS QI	atp.gqi	Number: 0=no fix 1=GPS 2=DGPS 3=PPS 4=RTK 5=RTK float 6=Estimated (dead reckoning, AirLink XR80/ XR90 routers only)	Type of location fix
GNSS HDOP	atp.ghdop	Number	Horizontal dilution of precision of the location fix
Satellite count	atp.gsat	Number	Number of satellites used in the location fix
GNSS Antenna Current	atp.gac	Milliamps	
GNSS Antenna State	atp.gants	String: ▪ Connected ▪ Disconnected ▪ Short ▪ Not available	Antenna connection status
GNSS DR Calibration	atp.drc	Number: 0 = Not available 1 = Not calibrated 2 = Calibrated	Dead reckoning calibration status. Reported at boot, and when value changes. AirLink XR80 and XR90 routers only.
Vehicle OBD Data Points			
Calc Engine Load (%)	atp.obdcel	Percentage	Calculated engine load
Engine Coolant Temp (degrees C)	atp.ect	Degrees Fahrenheit, -40 to 419	Engine coolant temperature
Engine RPM	atp.espd	Revolutions per minute, 0–16383	Engine speed

Data Point Name in AirLink OS	Data Point ID	Units/Threshold/Peak/Duration/Units	Description
Vehicle Speed	atp.vspd	Miles per Hour, 0–158	Vehicle speed
MAF Sensor air flow rate (mg/s)	atp.obdmaf	Milligrams per second, 0–655350	Mass Air Flow sensor air flow rate
Absolute Throttle Position (%)	atp.atpos	Percentage as integer	Current position of the throttle.

Data Point Name in AirLink OS	Data Point ID	Units/Threshold/Peak/Duration/Units	Description
OBD standards conformance	atp.obdstd	Number code, 1–255 1 = OBD-II as defined by the CARB 2 = OBD as defined by the EPA 3 = OBD and OBD-II 4 = OBD-I 5 = Not OBD compliant 6 = EOBD (Europe) 7 = EOBD and OBD-II 8 = EOBD and OBD 9 = EOBD, OBD and OBD-II 10 = JOBD (Japan) 11 = JOBD and OBD-II 12 = JOBD and EOBD 13 = JOBD, EOBD, and OBD-II 14–16: Reserved 17 = EMD 18 = EMD+ 19 = HD OBD-C 20 = HD OBD 21 = WWH OBD 22: Reserved 23 = HD EOBD-I 24 = HD EOBD-I N 25 = HD EOBD-II 26 = HD EOBD-II N 27: Reserved 28 = OBDBr-1 29 = OBDBr-2 30 = KOBD 31 = IOBD I 32 = IOBD II 33 = HD EOBD-IV 34-250: Reserved 251-255: J1939 special meaning	OBD standards to which this vehicle conforms
Time since Engine Start (seconds)	atp.ert	Seconds, 0–65535	Length of time since the engine started
Distance Traveled with MIL on (km)	atp.dmil	Kilometers, 0–65535	Distance traveled while Malfunction Indicator Light is on

Data Point Name in AirLink OS	Data Point ID	Units/Threshold/Peak/Duration/Units	Description
EGR error (%)	atp.obdegre	Percentage	Exhaust Gas Recirculation error
Fuel Level input (%)	atp.flvl	Percentage	Fuel level
Distance since DTCs cleared	atp.dtcd	Miles, 0–40721	Distance in Miles since the diagnostic trouble codes were cleared
Absolute Load value (%)	atp.obdalv	Percentage	
Relative Throttle Position (%)	atp.tpos	Percentage	Current position of the throttle
Ambient Air Temp	atp.atmp	Degrees Fahrenheit, -40–419	The current ambient air temperature.
Run time with MIL on (minutes)	atp.milrt	Minutes, 0–65535	
Run time since DTCs cleared (minutes)	atp.rtscc	Minutes, 0–65535	

Data Point Name in AirLink OS	Data Point ID	Units/Threshold/Peak/Duration/Units	Description
Fuel Type	atp.fuelt	0 = Not available 1 = gasoline 2 = methanol 3 = ethanol 4 = diesel 5 = LPG 6 = CNG 7 = propane 8 = electric 9 = bifuel running gasoline 10 = bifuel running methanol 11 = bifuel running ethanol 12 = bifuel running LPG 13 = bifuel running CNG 14 = bifuel running propane 15 = bifuel running electricity 16 = bifuel running electric and combustion engine 17 = hybrid gasoline 18 = hybrid ethanol 19 = hybrid diesel 20 = hybrid electric 21 = hybrid running electric and combustion engine 22 = hybrid regenerative 23 = bifuel running diesel	
Relative Accelerator Pedal position (%)	atp.accpos	Percentage	
Hybrid/EV battery - remaining charge (%)	atp.evsoc	Percentage	

Data Point Name in AirLink OS	Data Point ID	Units/Threshold/Peak/Duration/Units	Description
Engine Oil Temp (degrees C)	atp.eoilt	Degrees Celsius, -40–210	
Engine Fuel Rate	atp.frat	US Milli-gallons per hour, 0–848718	Fuel rate
Engine Fuel Rate 2	atp.efuelr2	Grams per second	
Brake Switch Status	atp.bss	1 = on 0 = off	Current status of the brake
PTO Status	atp.pto	1=on 0=off.	Current status of the power take-off
Driver Seatbelt	atp.sblt	1=fastened 0=off	Current status of the seatbelt
Odometer	atp.odo	Miles, 0–266876894	Current mileage count of the odometer
Trip Odometer	atp.todo	Miles	Distance traveled on the current trip
Battery Voltage (V)	atp.bat	Volts	Battery Voltage
Transmission Fluid Temp	atp.tft	Degrees Fahrenheit	Current transmission fluid temperature.
Trip Fuel	atp.tfc	Gallons	Amount of fuel consumed on the current trip
DTCs	atp.dtcs	Comma-separated list of the current diagnostic trouble codes	Diagnostic trouble codes
VIN	atp.vin	For North American vehicles, a 17-character string. For other region vehicles, a string up to 17 characters.	Vehicle identification number (VIN)
J1979 MIL status	atp.mil	0 = off 1 = on	Malfunction Indicator Light status

Data Point Name in AirLink OS	Data Point ID	Units/Threshold/Peak/Duration/Units	Description
J1979 Mode 1 PIDs	atp.pids	String	Comma-separated list of J1979 Mode 1 PIDs supported by this vehicle
Ignition Status	atp.igns	0 = ignition off 1 = ignition on	Current status of the ignition

Data Point Name in AirLink OS	Data Point ID	Units/Threshold/Peak/ Duration Units	Description
WAN Link Info (Applies to Routers with a Single Internal Cellular Radio like XR80)			
Internal Cellular Bars	atp.cell_bar	0–5 bars	Number of Signal Bars
Internal Cellular Carrier	atp.cell_crr	String	Carrier Name
Internal Cellular Carrier Technology	atp.cell_ct	String	Technology Name
Internal Cellular Band	atp.cell_lteb	String value Band *n*, where *n* is the band identifier. Band 12, Band 2, for example.	
Internal Cellular Status	atp.cell_sts	0 = not connected 1 = connected	
Internal Cellular Tx Bytes	atp.cell_txb	Number	Number of bytes transmitted via this interface over lifetime of router
Internal Cellular Rx Bytes	atp.cell_rxb	Number	Number of bytes received via this interface over lifetime of router
Internal Cellular IPV4 Address	atp.cell_ipv4	String: n.n.n.n, where n is 0–255	IPv4 address
XP Related Data (Applies to Devices with a Single Extendable Cartridge like XR80)			
XP Cellular Bars	atp.xp_bar	0–5 bars	Number of Signal Bars
XP Cellular Carrier	atp.xp_crr	String	Carrier Name

Data Point Name in AirLink OS	Data Point ID	Units/Threshold/Peak/ Duration Units	Description
XP Cellular Carrier Technology	atp.xp_ct	String	Technology Name
XP Cellular Band	atp.xp_lteb	String value Band *n*, where *n* is the band identifier. Band 12, Band 2, for example.	
XP Cellular Status	atp.xp_sts	0 = not connected 1 = connected	
XP Cellular Tx Bytes	atp.xp_txb	Number	Number of bytes transmitted via this interface over lifetime of router
XP Cellular Rx Bytes	atp.xp_rxb	Number	Number of bytes received via this interface over lifetime of router
XP Cellular IPV4 Address	atp.xp_ipv4	String: n.n.n.n, where n is 0–255	IPv4 address
XP1 Related Data (Applies to Devices with a Double Extendable Cartridge like XR90)			
XP1 Cellular Bars	atp.xp1_bar	0–5 bars	Number of Signal Bars
XP1 Cellular Carrier	atp.xp1_crr	String	Carrier Name
XP1 Cellular Carrier Technology	atp.xp1_ct	String	Technology Name
XP1 Cellular Band	atp.xp1_lteb	String value Band *n*, where *n* is the band identifier. Band 12, Band 2, for example.	
XP1 Cellular Status	atp.xp1_sts	0 = not connected 1 = connected	
XP1 Cellular Tx Bytes	atp.xp1_txb	Number	Number of bytes transmitted via this interface over lifetime of router
XP1 Cellular Rx Bytes	atp.xp1_rxb	Number	Number of bytes received via this interface over lifetime of router
XP1 Cellular IPV4 Address	atp.xp1_ipv4	String: n.n.n.n, where n is 0–255	IPv4 address

Data Point Name in AirLink OS	Data Point ID	Units/Threshold/Peak/ Duration Units	Description
XP2 Related Data (Applies to Devices with a Double Extendable Cartridge like XR90)			
XP2 Cellular Bars	atp.xp2_bar	0–5 bars	Number of Signal Bars
XP2 Cellular Carrier	atp.xp2_crr	String	Carrier Name
XP2 Cellular Carrier Technology	atp.xp2_ct	String	Technology Name
XP2 Cellular Band	atp.xp2_lteb	String value Band *n*, where *n* is the band identifier. Band 12, Band 2, for example.	
XP2 Cellular Status	atp.xp2_sts	0 = not connected 1 = connected	
XP2 Cellular Tx Bytes	atp.xp2_txb	Number	Number of bytes transmitted via this interface over lifetime of router
XP2 Cellular Rx Bytes	atp.xp2_rxb	Number	Number of bytes received via this interface over lifetime of router
XP2 Cellular IPV4 Address	atp.xp2_ipv4	String: n.n.n.n, where n is 0–255	IPv4 address
LPWA Related Data (Applies to XR80 and XR90)			
LPWA Bars	atp.lpwa_bar	0–5 bars	Number of Signal Bars
LPWA Carrier	atp.lpwa_crr	String	Carrier Name
LPWA Carrier Technology	atp.lpwa_ct	String	Technology Name
LPWA Band	atp.lpwa_lteb	String value Band *n*, where *n* is the band identifier. Band 12, Band 2, for example.	
LPWA Status	atp.lpwa_sts	0 = not connected 1 = connected	
LPWA Tx Bytes	atp.lpwa_txb	Number	Number of bytes transmitted via this interface over lifetime of router
LPWA Rx Bytes	atp.lpwa_rxb	Number	Number of bytes received via this interface over lifetime of router

Data Point Name in AirLink OS	Data Point ID	Units/Threshold/Peak/ Duration Units	Description
LPWA IPV4 Address	atp.lpwa_ipv4	String: n.n.n.n, where n is 0–255	IPv4 address
Primary WAN (generic data points)			
Primary WAN	atp.pwan	String	Reports which interface is the current Primary WAN interface
Primary WAN IPv4	atp.pwan_ipv4	String	Reports which WAN link is the Primary WAN interface for IPv4 traffic If there is no primary IPv4 WAN, "Nothing available" is reported
Primary WAN IPv6	atp.pwan_ipv6	String	Reports which WAN link is the Primary WAN interface for IPv6 traffic If there is no primary IPv6 WAN, "Nothing available" is reported
WAN Status flag	atp.wans	0 = not ready 1 = ready	Reports whether the router has a WAN connection In AirLink OS release 4.1, this reported the status of the Primary WAN interface. As of AirLink OS release 5.0, this reports whether any WAN interface (LPWA interface excluded) is available.
WAN IPv4 Address	atp.wana	n.n.n.n where n is number between 0–255	WAN IP address
Primary WAN Related Data (Applies to Cellular Interface)			
Signal Bars	atp.ssbar	0–5 bars	Number of Signal Bars If the current primary WAN interface is not a cellular interface, this item is not reported.
Cellular Carrier	atp.crr	String	Indicates the carrier of the primary WAN interface (for example, Rogers Wireless, Rogers, etc.) If the current primary WAN interface is not a cellular interface, this item is not reported.
Cellular Technology	atp.ct	String	Indicates the technology of the primary cellular WAN interface (for example, 4G,5G, etc.) If the current primary WAN interface is not a cellular interface, this item is not reported.
Cellular Band	atp.lteb	String value Band *n*, where *n* is the band identifier. Band 12, Band 2, for example.	Indicates the band number of the primary cellular WAN interface If the current primary WAN interface is not a cellular interface, this item is not reported.

Data Point Name in AirLink OS	Data Point ID	Units/Threshold/Peak/ Duration Units	Description
Wi-Fi Related Data			
XR90/XR80: Wi-Fi Client 2.4 GHz radio mode RX55: Wi-Fi A radio mode	atp.w1_wan	String "ap"=access "sta"=station/client)	If the value is "ap" then that Wi-Fi radio is set up as a Wi-Fi access point (being a LAN) If the value is "sta" then the Wi-Fi radio is set up as a Wi-Fi stations (i.e. a client connected to an Access Point, i.e. being a WAN)
XR90/XR80: Wi-Fi Client 2.4 GHz Status flag RX55: Wi-Fi A Status flag	atp.w1_sts	0 = not connected 1 = connected	
XR90/XR80: Wi-Fi Client 2.4 GHz bars RX55: Wi-Fi A bars	atp.w1_bar	Number of Signal Bars (0–5)	Number of Signal Bars
XR90/XR80: Wi-Fi Client 2.4 GHz label RX55: Wi-Fi A label	atp.w1_lbl	String	Reports the name of the interface in the AirLink OS UI.
XR90/XR80: Wi-Fi Client 2.4 GHz SSID RX55: Wi-Fi A SSID	atp.w1_ssid	String	The associated SSID. In station/client mode, this is the SSID of the AP to which the device is connected. For AP mode, this is the SSID being broadcast.
XR90/XR80: Wi-Fi Client 2.4 GHz TX bytes RX55: Wi-Fi A TX bytes	atp.w1_txb	Number of bytes	Number of bytes transmitted via this interface over lifetime of router
XR90/XR80: Wi-Fi Client 2.4 GHz RX bytes RX55: Wi-Fi A RX bytes	atp.w1_rxb	Number of bytes	Number of bytes received via this interface over lifetime of router
XR90/XR80: Wi-Fi Client 2.4 GHz IPv4 RX55: Wi-Fi A IPv4	atp.w1_ipv4	"n.n.n.n" where n is number between 0–255	IPv4 address

Data Point Name in AirLink OS	Data Point ID	Units/Threshold/Peak/ Duration Units	Description
XR90/XR80: Wi-Fi Client 2.4 GHz LAN Segment RX55: Wi-Fi A LAN Segment	atp.w1_brdg	String	Name of the associated LAN Segment. Indirectly identifies interface as WAN or LAN. "" means no LAN Segment, i.e. WAN interface; "<not empty>" means bridged, i.e. LAN interface Provides the same information that could be derived from atp.w1_wan
Wi-Fi A Related Data			
XR90: Wi-Fi A radio mode XR80: Wi-Fi Client 5 Ghz radio mode RX55: Wi-Fi B radio mode	atp.w2_wan	String ap=access sta=station/client)	If the value is "ap" then that Wi-Fi radio is set up as a Wi-Fi access point (being a LAN) If the value is "sta" then the Wi-Fi radio is set up as a Wi-Fi station (i.e. a client connected to an Access Point, i.e. being a WAN)
XR90: Wi-Fi A Status flag XR80: Wi-Fi Client 5 Ghz Status flag RX55: Wi-Fi B Status flag	atp.w2_sts	0 = not connected 1 = connected	
XR90: Wi-Fi A bars XR80: Wi-Fi Client 5 Ghz bars RX55: Wi-Fi B bars	atp.w2_bar	Number of Signal Bars (0–5)	Number of Signal Bars
XR90: Wi-Fi A label XR80: Wi-Fi Client 5 Ghz label RX55: Wi-Fi B label	atp.w2_lbl	String	Reports the name of the interface in the AirLink OS UI.
XR90: Wi-Fi A SSID XR80: Wi-Fi Client 5 Ghz SSID RX55: Wi-Fi B SSID	atp.w2_ssid	String	The associated SSID. In station/client mode, this is the SSID of the AP to which the device is connected. For AP mode, this is the SSID being broadcast.

Data Point Name in AirLink OS	Data Point ID	Units/Threshold/Peak/ Duration Units	Description
XR90: Wi-Fi A TX bytes XR80: Wi-Fi Client 5 Ghz TX bytes RX55: Wi-Fi B TX bytes	atp.w2_txb	Number of bytes	Number of bytes transmitted via this interface over lifetime of router
XR90: Wi-Fi A RX bytes XR80: Wi-Fi Client 5 Ghz RX bytes RX55: Wi-Fi B RX bytes	atp.w2_rxb	Number of bytes	Number of bytes received via this interface over lifetime of router
XR90: Wi-Fi A IPv4 XR80: Wi-Fi Client 5 Ghz IPv4 RX55: Wi-Fi B IPv4	atp.w2_ipv4	"n.n.n.n" where n is number between 0–255	IPv4 address
XR90: Wi-Fi A LAN Segment XR80: Wi-Fi Client 5 Ghz LAN Segment RX55: Wi-Fi B LAN Segment	atp.w2_brdg	String	Name of the associated LAN Segment. Indirectly identifies interface as WAN or LAN. "" means no LAN Segment, i.e. WAN interface; "<not empty>" means bridged, i.e. LAN interface Provides the same information that could be derived from atp.w2_wan
Wi-Fi B Related Data			
XR90: Wi-Fi B radio mode	atp.w3_wan	String ap=access sta=station/client)	If the value is "ap" then that Wi-Fi radio is set up as a Wi-Fi access point (being a LAN) If the value is "sta" then the Wi-Fi radio is set up as a Wi-Fi station (i.e. a client connected to an Access Point, i.e. being a WAN)
XR90: Wi-Fi B Status flag	atp.w3_sts	0 = not connected 1 = connected	
XR90: Wi-Fi B bars	atp.w3_bar	Number of Signal Bars (0–5)	Number of Signal Bars
XR90: Wi-Fi B label	atp.w3_lbl	String	Reports the name of the interface in the AirLink OS UI.
XR90: Wi-Fi B SSID	atp.w3_ssid	String	The associated SSID. In station/client mode, this is the SSID of the AP to which the device is connected. For AP mode, this is the SSID being broadcast.

Data Point Name in AirLink OS	Data Point ID	Units/Threshold/Peak/ Duration Units	Description
XR90: Wi-Fi B TX Bytes	atp.w3_txb	Number of bytes	Number of bytes transmitted via this interface over lifetime of router
XR90: Wi-Fi B RX Bytes	atp.w3_rxb	Number of bytes	Number of bytes received via this interface over lifetime of router
XR90: Wi-Fi B IPv4	atp.w3_ipv4	"n.n.n.n" where n is number between 0–255	IPv4 address
XR90: Wi-Fi B LAN Segment	atp.w3_brdg	String	Name of the associated LAN Segment. Indirectly identifies interface as WAN or LAN. "" means no LAN Segment, i.e. WAN interface; "<not empty>" means bridged, i.e. LAN interface Provides the same information that could be derived from atp.w3_wan
WAN Wi-Fi Related Data			
Wi-Fi WAN radio	atp.wwan	String	If the current primary WAN is a Wi-Fi interface, reports "sta". If the current primary WAN is not a Wi-Fi interface, this item is not reported.
Wi-Fi SSID	atp.wssid	String	If the current primary WAN is a Wi-Fi interface, reports the SSID of the Access Point to which the device is connected. If the current primary WAN is not a Wi-Fi interface, this item is not reported.
Ethernet 1 Related Data			
XR90/XR80: Ethernet 1 WAN Status flag RX55: Ethernet WAN Status flag	atp.e1_sts	0 = not connected 1 = connected	
XR90/XR80: Ethernet 1 IPv4 RX55: Ethernet IPv4	atp.e1_ipv4	"n.n.n.n" where n is number between 0–255	IPv4 address
XR90/XR80: Ethernet 1 TX bytes RX55: Ethernet TX bytes	atp.e1_txb	Number of bytes	Number of bytes transmitted by this Ethernet port

Data Point Name in AirLink OS	Data Point ID	Units/Threshold/Peak/ Duration Units	Description
XR90/XR80: Ethernet 1 RX bytes RX55: Ethernet RX bytes	atp.e1_rxb	Number of bytes	Number of bytes received by this Ethernet port
XR90/XR80: Ethernet 1 LAN Segment RX55: Ethernet LAN Segment	atp.e1_brdg	String	Name of the associated LAN Segment. Indirectly identifies interface as WAN or LAN. "" means no LAN Segment, i.e. WAN interface; "<not empty>" means bridged, i.e. LAN interface
Ethernet 2 Related Data			
Ethernet 2 Status flag	atp.e2_sts	0 = not connected 1 = connected	
Ethernet 2 IPV4	atp.e2_ipv4	"n.n.n.n" where n is number between 0–255	IPv4 address
Ethernet 2 Tx Bytes	atp.e2_txb	Number of bytes	Number of bytes transmitted by this Ethernet port
Ethernet 2 Rx Bytes	atp.e2_rxb	Number of bytes	Number of bytes received by this Ethernet port
Ethernet 2 LAN Segment	atp.e2_brdg	String	Name of the associated LAN Segment. Indirectly identifies interface as WAN or LAN. "" means no LAN Segment, i.e. WAN interface; "<not empty>" means bridged, i.e. LAN interface
Ethernet 3 Related Data			
Ethernet 3 Status flag	atp.e3_sts	0 = not connected 1 = connected	
Ethernet 3 IPV4	atp.e3_ipv4	"n.n.n.n" where n is number between 0–255	IPv4 address
Ethernet 3 Tx Bytes	atp.e3_txb	Number of bytes	Number of bytes transmitted by this Ethernet port
Ethernet 3 Rx Bytes	atp.e3_rxb	Number of bytes	Number of bytes received by this Ethernet port

Data Point Name in AirLink OS	Data Point ID	Units/Threshold/Peak/ Duration Units	Description
Ethernet 3 LAN Segment	atp.e3_brdg	String	Name of the associated LAN Segment. Indirectly identifies interface as WAN or LAN. "" means no LAN Segment, i.e. WAN interface; "<not empty>" means bridged, i.e. LAN interface
Ethernet XP Related Data (Applies to Devices like XR80)			
Ethernet XP Status flag	atp.exp_sts	0 = not connected 1 = connected	
Ethernet XP IPV4	atp.exp_ipv4	"n.n.n.n" where n is number between 0–255	IPv4 address
Ethernet XP Tx Bytes	atp.exp_txb	Number of bytes	Number of bytes transmitted by this Ethernet port
Ethernet XP Rx Bytes	atp.exp_rxb	Number of bytes	Number of bytes received by this Ethernet port
Ethernet XP LAN Segment	atp.exp_brdg	String	Name of the associated LAN Segment. Indirectly identifies interface as WAN or LAN. "" means no LAN Segment, i.e. WAN interface; "<not empty>" means bridged, i.e. LAN interface
Ethernet XP1 Related Data (Applies to Devices like XR80)			
Ethernet XP1 Status	atp.exp1_sts	0 = not connected 1 = connected	
Ethernet XP1 IPV4	atp.exp1_ipv4	"n.n.n.n" where n is number between 0–255	IPv4 address
Ethernet XP1 Tx Bytes	atp.exp1_txb	Number of bytes	Number of bytes transmitted by this Ethernet port
Ethernet XP1 Rx Bytes	atp.exp1_rxb	Number of bytes	Number of bytes received by this Ethernet port
Ethernet XP1 LAN Segment	atp.exp1_brdg	String	Name of the associated LAN Segment. Indirectly identifies interface as WAN or LAN. "" means no LAN Segment, i.e. WAN interface; "<not empty>" means bridged, i.e. LAN interface
Ethernet XP2 Related Data (Applies to Devices like XR90)			
Ethernet XP2 Status flag	atp.exp2_sts	0 = not connected 1 = connected	

Data Point Name in AirLink OS	Data Point ID	Units/Threshold/Peak/ Duration Units	Description
Ethernet XP2 IPV4	atp.exp2_ipv4	“n.n.n.n” where n is number between 0–255	IPv4 address
Ethernet XP2 Tx Bytes	atp.exp2_txb	Number of bytes	Number of bytes transmitted by this Ethernet port
Ethernet XP2 Rx Bytes	atp.exp2_rxb	Number of bytes	Number of bytes received by this Ethernet port
Ethernet XP2 LAN Segment	atp.exp2_brdg	String	Name of the associated LAN Segment. Indirectly identifies interface as WAN or LAN. "" means no LAN Segment, i.e. WAN interface; "<not empty>" means bridged, i.e. LAN interface
Device Info Related Data			
Device Serial Number	atp.ser	String	Reports the serial number of the device
Device Software Rev	atp.osrev	String	Reports code revision + date + time (e.g. "4.1.30 2021-09-16 23:08:15")
GPIO			
Primary GPIO Input	atp.pgpio	Number: 0 = inactive, 1 = active	I/O on power connector
GPIO Input 2	atp.gpio2	Number: 0 = inactive, 1 = active	I/O on the 8-pin connector
GPIO Input 3	atp.gpio3	Number: 0 = inactive, 1 = active	I/O on the 8-pin connector
GPIO Input 4	atp.gpio4	Number: 0 = inactive, 1 = active	I/O on the 8-pin connector
GPIO Input 5	atp.gpio5	Number: 0 = inactive, 1 = active	I/O on the 8-pin connector
GPIO Input Cumulative	atp.gpi	Multiple bit flags: 0 = inactive 1 = active	Bit 0: I/O input on power connector (value reported by atp.pgpio) Bit 1: I/O input on the 8-pin connector (value reported by atp.gpio2) Bit 2: I/O input on the 8-pin connector (value reported by atp.gpio3) Bit 3: I/O input on the 8-pin connector (value reported by atp.gpio4) Bit 4: I/O input on the 8-pin connector (value reported by atp.gpio5)

Data Point Name in AirLink OS	Data Point ID	Units/Threshold/Peak/ Duration Units	Description
Gateway Life Cycle			
Gateway Startup	atp.strt	n/a	Gateway Startup event, sent once upon gateway startup. Timestamp of this event is set to the time the gateway booted. This event will be generated only once upon the gateway boot.
Gateway Shutdown	atp.shut	0 = clean 1= unclean)	Reports whether the last shut down was clean (i.e., controlled) or unclean (such as after a crash or power failure).
Shutdown Time	atp.shuttime	timestamp, Unix epoch time	Reports the router's last shutdown time. If last shutdown was "unclean" (such as after a crash or power failure), this value will be "best guess", accurate within 30 seconds.
Link Heartbeat	atp.hb	Seconds	Periodic heart beat reporting elapsed time since boot up.

Data Points with Multiple Data Point IDs

The following items in the AirLink OS UI have multiple data points associated with them.

Data Point Name in AirLink OS	Data Point IDs	Description
Driver Behavior (hard coded reports generated when Vehicle Behavior feature is enabled)		
GPIO ARA	atp.glon atp.glat atp.ghed atp.gpi	Each data point's timestamp is set to the same value, regardless of whether they were actually sampled at the same time. Not recommended for use unless this behavior is explicitly desired. This item generates a report that is backwards compatible with "gpioinput" in ATP 2.0. When "GPIO ARA" is selected for inclusion in a report definition, the entire set of four ATP datapoints will be included in the report. When "GPIO ARA" is included in a report definition, do NOT also explicitly include any of four associated ATP datapoints in the report definition.
Harsh Acceleration incident start	atp.ainc_strt atp.iid atp.inci atp.inct atp.glon atp.glat atp.ghed	Accelerometer incident start is reported when vehicle forward acceleration rises above configured threshold value for a configured qualification period. ▪ atp.ainc_strt = incident start flag (no value) ▪ atp.iid = incident ID (Unix Epoch Time) used to tie the ainc_strt and ainc_end reports together. Both will have the same Incident ID. ▪ atp.inci = the initial reading when the threshold was first exceeded (mG) ▪ atp.inct = currently configured event threshold (mG) ▪ atp.glon = Location longitude (decimal degrees) ▪ atp.glat = Location latitude (decimal degrees) ▪ atp.ghed = Location heading (decimal degrees) **** Note that location data will only be included if there is a location fix.**

Data Point Name in AirLink OS	Data Point IDs	Description
Harsh Acceleration incident end	atp.ainc_end atp.iid atp.incp atp.inca atp.incd atp.glon atp.glat atp.ghed	Reported after vehicle forward acceleration drops back below the configured threshold value. ▪ atp.ainc_end = incident end flag (no value) ▪ atp.iid = incident ID (Unix Epoch Time) used to tie the ainc_strt and ainc_end reports together. Both will have the same Incident ID. ▪ atp.incp = peak value during event (mG) ▪ atp.inca = average accelerometer reading during the incident ▪ atp.incd = duration of the incident ▪ atp.glon = Location longitude (decimal degrees) ▪ atp.glat = Location Latitude (decimal degrees) ▪ atp.ghed = Location Heading (decimal degrees) **** Note that Location data will only be included if there is a Location fix.**
Harsh cornering incident start	atp.cinc_strt atp.iid atp.inci atp.inct atp.glon atp.glat atp.ghed	Reported when vehicle lateral acceleration rises above configured threshold value for a configured qualification period. ▪ atp.cinc_srt = incident start flag (no value) ▪ atp.iid = incident ID (Unix Epoch Time) used to tie the cinc_strt and cinc_end reports together. Both will have the same Incident ID. ▪ atp.inci = the initial reading when the threshold was first exceeded (mG) ▪ atp.inct = currently configured event threshold (mG) ▪ atp.glon = Location longitude (decimal degrees) ▪ atp.glat = Location latitude (decimal degrees) ▪ atp.ghed = Location heading (decimal degrees) **** Note that Location data will only be included if there is a Location fix.**
Harsh cornering incident end	atp.cinc_end atp.iid atp.incp atp.inca atp.incd atp.glon atp.glat atp.ghed	Reported after vehicle lateral acceleration drops back below the configured threshold value. ▪ atp.cinc_end = incident end flag (no value) ▪ atp.iid = Incident ID number used to pair atp.cinc_strt and atp.cinc_end reports ▪ atp.incp = peak value during event (mG) ▪ atp.inca = average accelerometer reading during the incident ▪ atp.incd = duration of the incident ▪ atp.glon = Location longitude (decimal degrees) ▪ atp.glat = Location Latitude (decimal degrees) ▪ atp.ghed = Location Heading (decimal degrees) **** Note that Location data will only be included if there is a Location fix.**

Data Point Name in AirLink OS	Data Point IDs	Description
Harsh Braking incident start	atp.dinc_strt atp.iid atp.inci atp.inct atp.glon atp.glat atp.ghed	Reported when vehicle deceleration force rises above configured threshold value for a configured qualification period. ▪ atp.dinc_strt = incident start flag (no value) ▪ atp.iid = incident ID used to pair atp.dinc_strt and atp.dinc_end reports ▪ atp.inci = the initial reading when the threshold was first exceeded (mG) ▪ atp.inct = currently configured event threshold (mG) ▪ atp.glon = Location longitude (decimal degrees) ▪ atp.glat = Location Latitude (decimal degrees) ▪ atp.ghed = Location Heading (decimal degrees) **** Note that Location data will only be included if there is a Location fix.**
Harsh Braking incident end	atp.dinc_end atp.iid atp.incp atp.inca atp.incd atp.glon atp.glat atp.ghed	Deceleration incident peak and duration are reported upon end of event. ▪ atp.dinc_end = incident end flag (no value) ▪ atp.iid = incident ID used to pair atp.dinc_strt and atp.dinc_end reports ▪ atp.incp = peak value during event (mG) ▪ atp.inca = average accelerometer reading during the incident ▪ atp.incd = duration of the incident ▪ atp.glon = Location longitude (decimal degrees) ▪ atp.glat = Location Latitude (decimal degrees) ▪ atp.ghed = Location Heading (decimal degrees) **** Note that Location data will only be included if there is a Location fix.**