



Voyomotive, LLC

VOYO Web API Documentation

Version 1.8

December 22, 2021

1. Overview

The VOYO Web API provides access to all of the vehicle data that is available from an individual VOYO controller in a specified time range.

2. VOYO Web API URL

The VOYO Web API is available using this URL:

```
prod001.voyomotive.com/api/all_cellular.php?
```

```
serial=[SERIAL]&
```

```
key=[API_KEY]&
```

```
start=[START_TIME]&
```

```
end=[END_TIME]
```

2.1. [SERIAL]

Serial Number of the VOYO controller that you are using.

The Serial Number can be viewed in the VOYO App:

VOYO Settings -> Your VOYO Network -> Select "Your Vehicle" -> "Your Vehicle" VOYO Controller Versions -> VOYO Controller Serial Number

2.2. [API_KEY]

Key to allow access to the API for the VOYO controller that you are using.

The API Key is provided by VOYO.

The API Key is specific to an individual VOYO controller.

If you'd like an API key to test live data please send an email to contact@voyomotive.com

2.3. [START_TIME]



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Start Time for the data range.

Start Time can be entered in Unix Epoch Time (UTC).

For example, a Start Time of 1483228800 provides a start time of January 1, 2017 at midnight, GMT.

Start Time can also be entered in seconds relative to the current time.

For example, a Start Time of -3600 provides a start time of 1 hour prior to the current time.

2.4. [END_TIME]

End Time for the data range in Unix Epoch Time (UTC).

End Time can be entered in Unix Epoch Time (UTC).

For example, an End Time of 1493596800 provides an end time of May 1, 2017 at midnight, GMT.

End Time can also be entered in seconds relative to the current time.

For example, an End Time of 0 provides an end time that is the current time.

2.5. Example URLs

Example URL:

https://prod001.vyomotive.com/api/all_cellular.php?serial=500243&key=BMZACAYKrVQWM6VNwSx5&start=1628627340&end=1628630940

Requests all of the data that is available from:

Serial Number 500243

Accessed with API Key BMZACAYKrVQWM6VNwSx5

With a Start Time of 8/10/2021 20:29:00 GMT

With an End Time of 8/10/2021 21:29:00 GMT

Example URL:

https://prod001.vyomotive.com/api/all_cellular.php?serial=500243&key=BMZACAYKrVQWM6VNwSx5&start=-3600&end=0

Requests all of the data that is available from:



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Serial Number 500243

Accessed with API Key BMZACAYKrVQWM6VNwSx5

With a Start Time of 1 hour prior to the current time

With an End Time that is the current time

3. Data Returned

All data is returned in JavaScript Object Notation (JSON).

All of the data for an individual VOYO Controller Serial Number that is available for the given time range is returned.

There are three types of data returned: VIN, events, and raw data.

3.1. VIN

VIN provides the 17-digit Vehicle Identification Number (VIN) of the vehicle that the data is returned from.

The VIN that is returned is the most recent VIN that was received prior to the provided [END_TIME]. If the VOYO Controller was installed on multiple vehicles during a given time range, only the most recent VIN that was received prior to the provided [END_TIME] is returned.

Format: "DDDDDDDDDDDDDDDDDD", where D are the 17 digits of the VIN that is returned

Example: "1P3ES42Y3WD641171"

3.2. Events

Events provide the data for specific vehicle conditions that occurred. Examples include ABS Braking and Vehicle Hard Braking. Events can be determined based on an individual vehicle data parameter, or from a combination of vehicle data parameters.

3.3. Raw Data

Raw data contains the individual data parameters that are available from the vehicle.

3.4. Data Returned Format

The VIN, events, and raw data are returned in this JSON format:

```
{"SERIAL-vin":"","  
"SERIAL-events":{}}
```



"SERIAL-data":[{}]

SERIAL is the Serial Number of the VOYO controller that you are using.

4. Types of Events

The types of events that are returned are:

4.1. "ABS":[]

Vehicle anti-lock braking system (ABS) was active

4.2. "Traction":[]

Vehicle traction control system was active

4.3. "Stability":[]

Vehicle stability control system was active

4.4. "Swerve":[]

Vehicle experienced a large change in steering wheel input while traveling greater than 20 mph

4.5. "Hard Braking":[]

Vehicle experienced a large deceleration while traveling greater than 20 mph

4.6. "DTC":[]

Vehicle diagnostic trouble code (DTC) was set

4.7. Event Types Data Returned Format

The event types are returned in this JSON format:

```
{"SERIAL-events":[{"ABS":[],"Traction":[],"Stability":[],"Swerve":[],"Hard Braking":[],"DTC":[]}]
```

5. Data Associated with an Event

When an event occurs, data associated with the event is stored.

The GPS latitude, GPS longitude, and GPS time are associated with every type of event. This data is returned for every event that has occurred.

If no events occurred for a given type of event, no associated data is returned.



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5.1. "lat":

GPS latitude coordinate of the vehicle where the event occurred

Resolution: 0.00000001 degrees

Minimum: -90.00000000 degrees

Maximum: +90.00000000 degrees

Example: "42.23106800"

0.0 if GPS latitude coordinate is not available

5.2. "lon":

GPS longitude coordinate of the vehicle where the event occurred

Resolution: 0.00000001 degrees

Minimum: -180.00000000 degrees

Maximum: +180.00000000 degrees

Example: "-83.73893500"

0.0 if GPS longitude coordinate is not available

5.3. "time":

GPS time that the event occurred

Format: "YYYY-MM-DD HH:MM:SS"

Resolution: 1 second

Example: "2017-03-29 16:32:11"

0.0 if time event occurred is not available

5.4. "code":

Diagnostic trouble code (DTC) number (only returned for DTC event type)

Format: "LNNNN", where L is 1 digit DTC letter (P, C, B, or U) and N is 4 digit DTC number

Example: "P1682"

5.5. Data Associated with an Event Return Format

Data associated with an event is returned in this JSON format:



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```
{"SERIAL-events":[{"EVENT_1":{  
  {"lat":"LATITUDE_COORDINATE_1","lon":"LONGITUDE_COORDINATE_1","time":"TIME_1"},  
  {"lat":"LATITUDE_COORDINATE_N","lon":"LONGITUDE_COORDINATE_N","time":"TIME_N"}},  
  "EVENT_N":{  
    {"lat":"LATITUDE_COORDINATE_1","lon":"LONGITUDE_COORDINATE_1","time":"TIME_1"},  
    {"lat":"LATITUDE_COORDINATE_N","lon":"LONGITUDE_COORDINATE_N","time":"TIME_N"}}}]}
```

5.6. Example Event Data Returned

Example event data returned:

```
{"2000-events":{"ABS":[],  
  "Traction":[{"lat":"42.23106800","lon":"-83.73893500","time":"2017-05-01 16:32:11"}],  
  "Stability":[{"lat":"42.28175500","lon":"-83.75875000","time":"2017-05-02 00:08:58"},  
  {"lat":"0.00000000","lon":"0.00000000","time":"2017-05-03 11:25:55"}],  
  "Swerve":[],"Hard Braking":[]},  
  "DTC":[{"lat":"42.20440400","lon":"-83.76824000","time":"2017-05-06 00:00:56","code":"P1682"}]}}
```

At GPS Time 16:32:11 on May 1; a Traction event was stored with latitude and longitude data.

At GPS Time 00:08:58 on May 2; a Stability event was stored with latitude and longitude data.

At GPS Time 11:25:55 on May 3; a Stability event was stored without latitude or longitude location data.

At GPS Time 00:00:56 on May 6; a DTC event with DTC number P1682 was stored with latitude and longitude data.

Zero ABS, Swerve, and Hard Braking events were stored.

6. Raw Data

Raw data is also returned. Each of the raw data individual data parameters that are available from the vehicle are associated with a timestamp. The timestamp is the GPS time when the individual data parameter was stored, with a resolution of 1 second.



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6.1. GPS Timestamp Format

The GPS timestamp is always returned in with the raw data in this JSON format:

Format: "gps_time":"YYYY-MM-DD HH:MM:SS"

Resolution: 1 second

Example: "gps_time":"2017-03-29 16:32:11"

6.2. Raw Data Returned

All of the individual data parameters available at a given GPS timestamp are returned.

If an individual data parameter was not available at a given GPS timestamp, it is not returned. If an individual data parameter is not supported on a given vehicle, it is not returned.

The individual data parameters that are returned are available as values or as a series of states, depending on the type of individual data parameter.

Individual data parameters available as values have a specified resolution, minimum, maximum, and units.

Individual data parameters available as states have a specified series of states, up to 14 states.

The addendum Voyo Web API spreadsheet has the complete list of individual data parameters available.

6.3. Raw Data Returned Format

The raw data is returned in this JSON format:

```
"SERIAL-data":{"gps_time_1":"YYYY-MM-DDHH:MM:SS",  
"RAW_DATA_PARAMETER_1":"RAW_DATA_VALUE_1",  
"RAW_DATA_PARAMETER_N":"RAW_DATA_VALUE_N"},  
{"gps_time_N":"YYYY-MM-DD HH:MM:SS",  
"RAW_DATA_PARAMETER_1":"RAW_DATA_VALUE_1",  
"RAW_DATA_PARAMETER_N":"RAW_DATA_VALUE_N"}}
```

6.4. Example Raw Data Returned

Example raw data returned:



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"2000-data":[

```
{"gps_time":"2017-03-27 18:02:56","latitude":"42.24127200","longitude":"-83.57084600","speed":"0.00"},
```

```
{"gps_time":"2017-03-27 18:02:57","latitude":"42.24127200","longitude":"-83.57084600","battery_voltage":"1484","fuel_level":"96.8627","ambient_air_temp":"20.00","barometric_pressure":"99.00","engine_coolant_temp":"58.00","key_position":"on","engine_running":"running"}]}
```

At GPS Time 18:02:56 on Mar 27; the latitude, longitude, and speed individual data parameters were stored.

The next second, at GPS Time 18:02:57; the latitude, longitude, battery voltage, fuel level, ambient air temperature, barometric pressure, engine coolant temperature, key position, and engine running individual data parameters were stored.



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7. Change Log

Version	Date	Author	Change Log
1.8	Dec 22, 2021	Adam Sloan	Remove inactive links
1.7	Oct 9, 2021	Adam Sloan	Add cellular support and update example
1.6	Apr 16, 2021	Adam Sloan	Add monitor_status, engine_oil_temperature, fuel_trim, oxygen_sensor
1.5	Oct 1, 2020	Adam Sloan	Add parameters lft_temp, rft_temp, lrt_temp, rrt_temp
1.4	Sep 20, 2019	Adam Sloan	Add Section 7. Commands Update Example URLs
1.3	Aug 4, 2017	Adam Sloan	Add parameter 'mil' Malfunction indicator lamp
1.2	Jun 26, 2017	Adam Sloan	Provide 0.0 if GPS coordinate is not available, not NULL as previously indicated
1.1	Jun 2, 2017	Adam Sloan	Add VIN to types of data returned Add Section 3.1 VIN Remove sentence "[API_KEY] A unique API Key is needed for each VOYO controller that you have" from Section 2.2.
1.0	May 16, 2017	Adam Sloan	Initial release

	A	B	C	D	E	F	G	H	I	J	K	L	M
1		Values				States							
2	Parameter	Resolution	Minimum	Maximum	Units	State 1	State 2	State 3	State 4	State 5	State 6	State 7+	Description
3	gps_time	1			seconds								YYYY-MM-DD HH:MM:SS
4	latitude	0.00000001	-90.00000000	+90.00000000	degrees								GPS latitude coordinate
5	longitude	0.00000001	-180.00000000	+180.00000000	degrees								GPS longitude coordinate
6	pdop	0.1	0	50									GPS positional dilution of precision
7	gps_speed	1	0	255	kph								GPS speed
8	bearing	1	0	360	degrees								GPS bearing
9	altitude	1	-32768	32767	m								GPS altitude
10	num_satellites	1	0	24									GPS number of satellites in view
11	gps_distance	1	0	65535	m								Distance calculated from change in GPS position
12	gps_cumulative_distance	1	0	4294967295	m								Cumulative distance calculated from cumulative sum of gps_distance
13	x	0.002	-16.000	+16.000	g								Accelerometer x acceleration
14	y	0.002	-16.000	+16.000	g								Accelerometer y acceleration
15	z	0.002	-16.000	+16.000	g								Accelerometer z acceleration
16	battery_voltage	1	1	65535	V * 100								12V battery voltage, 1200 = 12.00V
17	battery_charge	100/65535	0	100	%								12V battery state of charge
18	fuel_level	100/65535	0	100	%								Fuel level
19	oil_pressure	0.01	0	655.35	kPa								Oil pressure
20	oil_life	100/65535	0	100	%								Oil life
21	ventilation_mode					Off	Upper	Upper/Lower	Lower	Defrost/Lower	Defrost		HVAC ventilation mode
22	circulation_mode					Recirculation	Exterior						HVAC circulation mode
23	rear_defrost					0	1						Rear defrost on, 0 = off, 1 = on
24	ac					0	1						Air conditioning on, 0 = off, 1 = on
25	fan_speed	100/255	0	100	%								HVAC blower fan speed
26	cabin_temperature	0.01	-327.68	327.67	degrees celcius								Cabin temperature
27	target_temperature	0.01	-327.68	327.67	degrees celcius								HVAC cabin target temperature
28	fl_door_status					0	1						Front left door open, 0 = closed, 1 = open
29	fl_lock_status					0	1						Front left door locked, 0 = unlocked, 1 = locked
30	fl_window_status					0	1						Front left window open, 0 = closed, 1 = open
31	fr_door_status					0	1						Front right door open, 0 = closed, 1 = open
32	fr_lock_status					0	1						Front right door locked, 0 = unlocked, 1 = locked
33	fr_window_status					0	1						Front right window open, 0 = closed, 1 = open
34	rl_door_status					0	1						Rear left door open, 0 = closed, 1 = open
35	rl_lock_status					0	1						Rear left door locked, 0 = unlocked, 1 = locked
36	rl_window_status					0	1						Rear left window open, 0 = closed, 1 = open
37	rr_door_status					0	1						Rear right door open, 0 = closed, 1 = open
38	rr_lock_status					0	1						Rear right door locked, 0 = unlocked, 1 = locked
39	rr_window_status					0	1						Rear right window open, 0 = closed, 1 = open
40	any_door_status					0	1						Any door open, 0 = closed, 1 = open
41	any_lock_status					0	1						Any door locked, 0 = unlocked, 1 = locked
42	any_window_status					0	1						Any window open, 0 = closed, 1 = open
43	trunk_door_status					0	1						Trunk open, 0 = closed, 1 = open
44	trunk_lock_status					0	1						Trunk locked, 0 = unlocked, 1 = locked
45	trunk_window_status					0	1						Trunk window open, 0 = closed, 1 = open
46	hood_switch					0	1						Hood open, 0 = closed, 1 = open
47	alarm_status					Disabled	Inactive	Active					Alarm status
48	horn					0	1						Horn, 0 = inactive, 1 = active
49	glove_box					0	1						Glove box open, 0 = closed, 1 = open
50	stability					Not_Present	Disabled	Enabled	Active				Stability control system status
51	traction					Not_Present	Disabled	Enabled	Active				Traction control system status
52	abs					Not_Present	Disabled	Enabled	Active				Anti-lock brake system status
53	forward_collision					Not_Present	Disabled	Enabled	Active				Forward collision warning
54	ambient_air_temp	0.01	-327.68	327.67	degrees celcius								Ambient air temperature
55	barometric_pressure	0.01	0	655.35	kPa								Barometric pressure
56	engine_coolant_temp	0.01	-327.68	327.67	degrees celcius								Engine coolant temperature
57	ambient_light_sensor					Off	On						Ambient light sensor
58	intake_air_temp	0.01	-327.68	327.67	degrees celcius								Intake air temperature
59	key_position					off	acc	on	start	no_key			Key position
60	engine_running					off	killed	running					Engine running status
61	parking_brake					0	1						Parking brake engaged, 0 = not engaged, 1 = engaged
62	transmission_gear					neutral	park	reverse	park_neutral	cvt	drive_1	drive_2-drive_8	Transmission gear
63	shift_position					neutral	park	drive_low	reverse	drive	manual_drive	manual_drive_2-7	Transmission shift position
64	clutch_state					out	intermittent	in					Clutch state
65	clutch_position	100/4095	0	100	%								Clutch position
66	propulsion_active					0	1						Vehicle propulsion active, 0 = inactive, 1 = active
67	hazards_status					0	1						Hazards on, 0 = off, 1 = on
68	turn_signal					None	Right	Left	Both				Turn signal status
69	fog_lights					0	1						Fog lights on, 0 = off, 1 = on
70	switch					Off	Parking	On	Brights	Auto	DRL		Headlight switch
71	headlights					Off	Parking	On	Brights	Auto	DRL		Headlights
72	windshield_wiper_speed	1	0	65535									Windshield wiper speed
73	windshield_wiper_state					Off	Intermittent	Medium	Fast	Wash	On		Windshield wiper state
74	interior_lights					Off	On	Overhead	Mirror				Interior lights
75	fls_occupied					0	1						Front left seat occupied, 0 = unoccupied, 1 = occupied

	A	B	C	D	E	F	G	H	I	J	K	L	M
76	fls_buckled					0	1						Front left seat buckled, 0 = unbuckled, 1 = buckled
77	frs_occupied					0	1						Front right seat occupied, 0 = unoccupied, 1 = occupied
78	frs_buckled					0	1						Front right seat buckled, 0 = unbuckled, 1 = buckled
79	rls_occupied					0	1						Rear left seat occupied, 0 = unoccupied, 1 = occupied
80	rls_buckled					0	1						Rear left seat buckled, 0 = unbuckled, 1 = buckled
81	rrs_occupied					0	1						Rear right seat occupied, 0 = unoccupied, 1 = occupied
82	rrs_buckled					0	1						Rear right seat buckled, 0 = unbuckled, 1 = buckled
83	impact					None	Front	Rear	Right	Left	Rollover	Any	Impact detected
84	driver_airbag					Not_Present	Disabled	Enabled	Deployed				Driver airbag
85	passenger_airbag					Not_Present	Disabled	Enabled	Deployed				Passenger airbag
86	lr_airbag					Not_Present	Disabled	Enabled	Deployed				Left rear airbag
87	rr_airbag					Not_Present	Disabled	Enabled	Deployed				Right rear airbag
88	lfc_airbag					Not_Present	Disabled	Enabled	Deployed				Left front curtain airbag
89	rfc_airbag					Not_Present	Disabled	Enabled	Deployed				Right front curtain airbag
90	lrc_airbag					Not_Present	Disabled	Enabled	Deployed				Left rear curtain airbag
91	rrc_airbag					Not_Present	Disabled	Enabled	Deployed				Right rear curtain airbag
92	odometer	0.001	0	4294967.295	km								Odometer
93	distance	1	0	65535	m								Distance calculated from speed
94	cumulative_distance	1	0	4294967295	m								Cumulative distance calculated from cumulative sum of distance
95	mil_distance	1	0	65535	km								Distance traveled with malfunction indicator lamp (MIL) on
96	accelerator_pedal_pressure	100/65535	0	100	%								Accelerator pedal percentage depressed
97	brake_pedal_pressure	100/65535	0	100	%								Brake pedal percentage depressed
98	steering_wheel_angle	0.1	-3276.8	3276.7	degrees								Steering wheel angle, clockwise past 0 degrees is positive
99	brake_pedal_state					0	1						Brake pedal state, 0 = not depressed, 1 = depressed
100	lft_pressure	0.01	0	655.35	kPa								Left front tire pressure
101	rft_pressure	0.01	0	655.35	kPa								Right front tire pressure
102	lrr_pressure	0.01	0	655.35	kPa								Left rear tire pressure
103	rrr_pressure	0.01	0	655.35	kPa								Right rear tire pressure
104	lft_temp	0.01	-327.68	327.67	degrees celcius								Left front tire temperature
105	rft_temp	0.01	-327.68	327.67	degrees celcius								Right front tire temperature
106	lrr_temp	0.01	-327.68	327.67	degrees celcius								Left rear tire temperature
107	rrr_temp	0.01	-327.68	327.67	degrees celcius								Right rear tire temperature
108	speed	0.01	0	655.35	kph								Vehicle speed
109	rpm	1	0	65535	rpm								Engine RPM
110	instantaneous_fuel_economy	0.01	0	655.35	L/hr								Instantaneous fuel economy
111	mass_air_flow	0.01	0	655.35	grams/s								Mass air flow
112	manifold_absolute_pressure	0.01	0	655.35	kPa								Manifold absolute pressure
113	engine_load	100/65535	0	100	%								Engine load
114	mil_status					0	1						Malfunction indicator lamp status
115	dtc_count	1	0	127									Diagnostic trouble codes available
116	ignition_monitor					SPARK	COMPRESSION						Ignition monitors supported
117	component_test					TEST_UNAVAILAB	TEST_UNAVAILAB	TEST_AVAILABLE	TEST_AVAILABLE_COMPLETE				Component test status
118	fuel_system_test					TEST_UNAVAILAB	TEST_UNAVAILAB	TEST_AVAILABLE	TEST_AVAILABLE_COMPLETE				Fuel system test status
119	misfire_test					TEST_UNAVAILAB	TEST_UNAVAILAB	TEST_AVAILABLE	TEST_AVAILABLE_COMPLETE				Misfire test status
120	EGR_system					TEST_UNAVAILAB	TEST_UNAVAILAB	TEST_AVAILABLE	TEST_AVAILABLE_COMPLETE				EGR system test status
121	oxygen_sensor_heater					TEST_UNAVAILAB	TEST_UNAVAILAB	TEST_AVAILABLE	TEST_AVAILABLE_COMPLETE				Oxygen sensor heater test status
122	oxygen_sensor					TEST_UNAVAILAB	TEST_UNAVAILAB	TEST_AVAILABLE	TEST_AVAILABLE_COMPLETE				Oxygen sensor test status
123	AC_refrigerant					TEST_UNAVAILAB	TEST_UNAVAILAB	TEST_AVAILABLE	TEST_AVAILABLE_COMPLETE				AC refrigerant test status
124	secondary_air_system					TEST_UNAVAILAB	TEST_UNAVAILAB	TEST_AVAILABLE	TEST_AVAILABLE_COMPLETE				Secondary air system test status
125	evaporative_system					TEST_UNAVAILAB	TEST_UNAVAILAB	TEST_AVAILABLE	TEST_AVAILABLE_COMPLETE				Evaporative system test status
126	heated_catalyst					TEST_UNAVAILAB	TEST_UNAVAILAB	TEST_AVAILABLE	TEST_AVAILABLE_COMPLETE				Heated catalyst test status
127	catalyst					TEST_UNAVAILAB	TEST_UNAVAILAB	TEST_AVAILABLE	TEST_AVAILABLE_COMPLETE				Catalyst test status
128	VVT_system					TEST_UNAVAILAB	TEST_UNAVAILAB	TEST_AVAILABLE	TEST_AVAILABLE_COMPLETE				VVT system test status
129	PM_filter_monitoring					TEST_UNAVAILAB	TEST_UNAVAILAB	TEST_AVAILABLE	TEST_AVAILABLE_COMPLETE				PM filter monitoring test status
130	exhaust_gas_sensor					TEST_UNAVAILAB	TEST_UNAVAILAB	TEST_AVAILABLE	TEST_AVAILABLE_COMPLETE				Exhaust gas sensor test status
131	boost_pressure					TEST_UNAVAILAB	TEST_UNAVAILAB	TEST_AVAILABLE	TEST_AVAILABLE_COMPLETE				Boost pressure test status
132	NOx_SCR_monitor					TEST_UNAVAILAB	TEST_UNAVAILAB	TEST_AVAILABLE	TEST_AVAILABLE_COMPLETE				NOx SCR monitor test status
133	NMHC_catalyst					TEST_UNAVAILAB	TEST_UNAVAILAB	TEST_AVAILABLE	TEST_AVAILABLE_COMPLETE				NMHC catalyst test status
134	engine_oil_temperature	1	-40	210	degrees celcius								Engine oil temperature
135	primary_short_term_fuel_trim	100/128	-100	99.2	%								Primary short term fuel trim
136	primary_long_term_fuel_trim	100/128	-100	99.2	%								Primary long term fuel trim
137	secondary_short_term_fuel_trim	100/128	-100	99.2	%								Secondary short term fuel trim
138	secondary_long_term_fuel_trim	100/128	-100	99.2	%								Secondary long term fuel trim
139	oxygen_sensor_present					Bitmask - [A0..A3] == Bank 1, Sensors 1-4. [A4..A7] == Bank 2, Sensors 1-4.							Oxygen sensor present
140	oxygen_sensor_voltage_1	1/200	0	1.275	V								Oxygen sensor 1 voltage
141	oxygen_sensor_fuel_1	100/128	-100	99.2	%								Oxygen sensor 1 short term fuel trim
142	oxygen_sensor_voltage_2	1/200	0	1.275	V								Oxygen sensor 2 voltage
143	oxygen_sensor_fuel_2	100/128	-100	99.2	%								Oxygen sensor 2 short term fuel trim
144	oxygen_sensor_voltage_3	1/200	0	1.275	V								Oxygen sensor 3 voltage
145	oxygen_sensor_fuel_3	100/128	-100	99.2	%								Oxygen sensor 3 short term fuel trim
146	oxygen_sensor_voltage_4	1/200	0	1.275	V								Oxygen sensor 4 voltage
147	oxygen_sensor_fuel_4	100/128	-100	99.2	%								Oxygen sensor 4 short term fuel trim
148	x1	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer x acceleration at time 1
149	x2	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer x acceleration at time 2
150	x3	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer x acceleration at time 3

	A	B	C	D	E	F	G	H	I	J	K	L	M
151	x4	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer x acceleration at time 4
152	x5	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer x acceleration at time 5
153	x6	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer x acceleration at time 6
154	x7	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer x acceleration at time 7
155	x8	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer x acceleration at time 8
156	x9	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer x acceleration at time 9
157	x10	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer x acceleration at time 10
158	x11	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer x acceleration at time 11
159	x12	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer x acceleration at time 12
160	x13	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer x acceleration at time 13
161	x14	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer x acceleration at time 14
162	x15	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer x acceleration at time 15
163	x16	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer x acceleration at time 16
164	x17	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer x acceleration at time 17
165	x18	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer x acceleration at time 18
166	x19	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer x acceleration at time 19
167	x20	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer x acceleration at time 20
168	y1	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer y acceleration at time 1
169	y2	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer y acceleration at time 2
170	y3	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer y acceleration at time 3
171	y4	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer y acceleration at time 4
172	y5	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer y acceleration at time 5
173	y6	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer y acceleration at time 6
174	y7	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer y acceleration at time 7
175	y8	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer y acceleration at time 8
176	y9	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer y acceleration at time 9
177	y10	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer y acceleration at time 10
178	y11	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer y acceleration at time 11
179	y12	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer y acceleration at time 12
180	y13	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer y acceleration at time 13
181	y14	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer y acceleration at time 14
182	y15	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer y acceleration at time 15
183	y16	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer y acceleration at time 16
184	y17	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer y acceleration at time 17
185	y18	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer y acceleration at time 18
186	y19	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer y acceleration at time 19
187	y20	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer y acceleration at time 20
188	z1	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer z acceleration at time 1
189	z2	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer z acceleration at time 2
190	z3	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer z acceleration at time 3
191	z4	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer z acceleration at time 4
192	z5	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer z acceleration at time 5
193	z6	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer z acceleration at time 6
194	z7	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer z acceleration at time 7
195	z8	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer z acceleration at time 8
196	z9	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer z acceleration at time 9
197	z10	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer z acceleration at time 10
198	z11	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer z acceleration at time 11
199	z12	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer z acceleration at time 12
200	z13	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer z acceleration at time 13
201	z14	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer z acceleration at time 14
202	z15	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer z acceleration at time 15
203	z16	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer z acceleration at time 16
204	z17	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer z acceleration at time 17
205	z18	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer z acceleration at time 18
206	z19	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer z acceleration at time 19
207	z20	0.002	-16.000	+16.000	g								Extended 20Hz accelerometer z acceleration at time 20