Communication Protocol

ClairWav Radar Detectors

V3.1

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1. Communication Protocol for Models without Camera

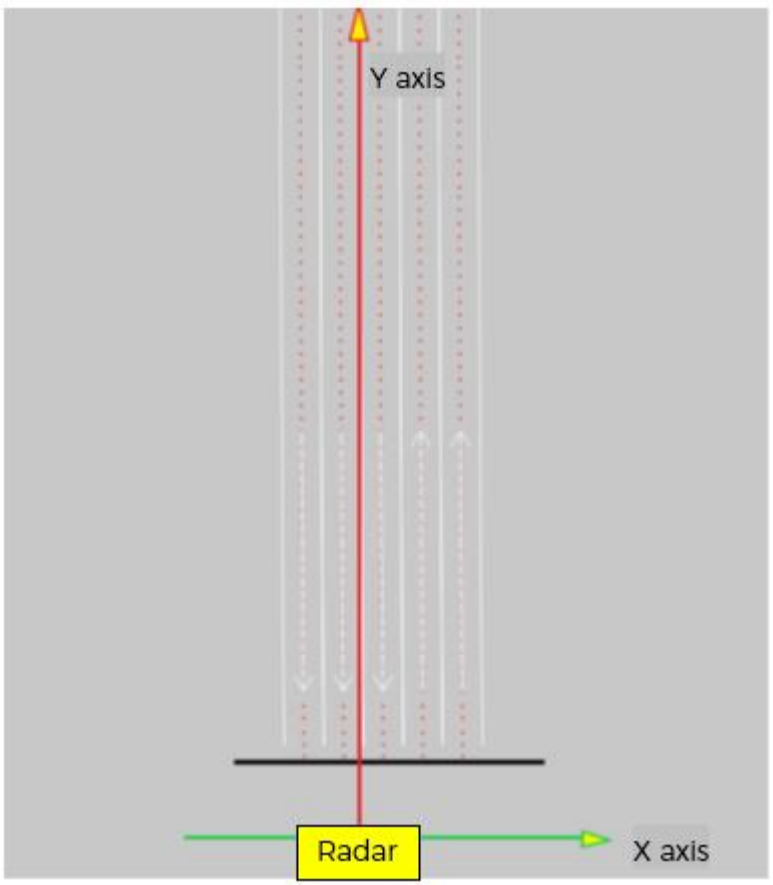
Note: The following communication protocol is optimized for ClairWav-T24/T80/U24 models. It is specifically designed for applications that do not require additional video-based content, such as license plate recognition or detailed vehicle classifications.

1.1 Communication Conventions

1.To ensure the real-time and reliable transmission of data, the communication uses the standard TCP protocol. The radar acts as a TCP client, and each radar establishes a TCP connection with the MEC.

2. Data is transmitted using network byte order.

3. The definition of the radar data reference frame is illustrated in the following diagram:



The radar position is taken as the origin of the coordinate system, with the direction of the radar's normal defined as the Y-axis and the direction perpendicular to the normal defined as the X-axis. All coordinate data, velocity, and acceleration in the protocol are based on this standard.

1.2 Data Type Definitions

Data Type	Abbreviation	Byte
char	T	1
unsigned char	UT	1
short	S	2
unsigned short	US	2
int	L	4
unsigned int	UL	4
float	float	4
double	double	8
string	C	NotFixed

1.3 Data Packet Format

The data packet consists of a header, data body, and footer.

The reporting interval of target trajectory data: 100ms.

The reporting interval of traffic flow statistics data: 1 minute.

Notes:

1. If the server does not receive radar data for 20 seconds, the TCP connection will be terminated. When the radar sends data again, it must initiate a new connection request.

2. If there are no targets, the radar should still periodically report target trajectory data according to the data frame format, but the "target data" field will be empty.

1.3.1 Data Frame Format

NO.	Name	Bytes	Description
1	Header	4	55 AA 55 BB
2	Data length	2	The total length of bytes from index 2 to index 7
3	Data frame type	1	0x01：ObjectData 0x03：TrafficData

4	Checksum		Indexes 5 to 7 are involved in the checksum calculation.
			Checksum algorithm: The checksum is calculated by summing up the bytes in the data storage area and taking the low 8 bits of the sum.
			
			Code:
			
			// unsigned char* data Data buffer pointer
			// int start The position where checksum calculation starts
			// int len The number of bytes involved in checksum calculation
			
			unsigned char checkSum(unsigned char* data, int start, int len)
			{
			int sum=0;
			for(int i=start; i<len; i++)
			{
			sum+=*(data+i);
			}

			unsigned char ret=sum&0xFF;
			return ret;
			}

5	Device ID	20	Taken from the device installation parameters
6	Data timestamp	8	The time of data transmission (accurate to milliseconds)
7	Target data	N*Length	Collection of target data N <= 256, indicating the number of targets; Length: (1) When the data frame type is ObjectData, the value is 36; (2) When the data frame type is TrafficData, the value is 22.
8	Footer	4	55 CC 55 DD

1.3.2 Data Length

NO.	bit15	bit14	bit13	bit12	bit11	bit10	bit9	bit8
Function	length[15:8] high 8 bits							
NO.	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
Function	length[7:0] low 8 bits							

1.3.3 Device ID

NO.	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Function	DEV_ID							
NO.	Byte9	Byte10	Byte11	Byte12	Byte13	Byte14	Byte15	Byte16
Function	DEV_ID							
NO.	Byte17	Byte18	Byte19	Byte20				
Function	DEV_ID							

The device ID is a maximum of 20 bytes, taken from the device installation parameters. Each byte represents a character's ASIC code.

For example,

Device ID is: 0000001

DEV_ID: 0x30 0x30 0x30 0x30 0x30 0x30 0x31

NO.	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Function	0x30	0x30	0x30	0x30	0x30	0x30	0x31	0x00
NO.	Byte9	Byte10	Byte11	Byte12	Byte13	Byte14	Byte15	Byte16
Function	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00
NO.	Byte17	Byte18	Byte19	Byte20				

Function	0x00	0x00	0x00	0x00				

1.3.4 Data timestamp

NO.	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Function	year	month	day	hour	min	sec	ms	

The data timestamp represents the time when radar data was updated, accurate to milliseconds, and is represented using 8 bytes.

1) year data bit description

NO.	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
Function	Data 0 to 255 corresponds to the years 2000 to 2255.							

2) month data bit description

NO.	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
Function	Reserved	Reserved	Reserved	Reserved	month[3:0]: 1-12 month			

3) day data bit description

NO.	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
Function	Reserved	Reserved	Reserved	day[4:0]: 1-31 day				

4) hour data bit description

NO.	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
Function	Reserved	Reserved	Reserved	hour[4:0]: 0-23 hour				

5) min data bit description

NO.	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
Function	Reserved	Reserved	min[5:0]: 0-59 min					

6) sec data bit description

NO.	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
Function	Reserved	Reserved	sec[5:0]: 0-59 sec					

7) ms data bit description

NO.	bit15	bit14	bit13	bit12	bit11	bit10	bit9	bit9
Function	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	ms[9:9]	
NO.	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0

Function	ms[7:0]

Note: The range of values for ms[0:9] is from 0 to 999.

1.3.5 Target trajectory data (0x01：ObjectData)

NO.	Name	Type	Bytes	Description
1	Target number	US	2	Loop ID allocation, range: 0 to 65535
2	Lane to which the target belongs	UT	1	The target coordinates are located in the specific lane number set by the user. Radar monitors specific lane numbers using the following rules: For single-lane roads: - Upstream: 01 - Downstream: 03 For roads with more than two lanes: - Upstream (closer to the radar): Lane numbers are consecutively assigned from inner (innermost lane) to outer (outermost lane), starting

				from 11. - Downstream (away from the radar): Lane numbers are consecutively assigned from inner (innermost lane) to outer (outermost lane), starting from 31. The arrangement rule for lane numbers is as follows: first upstream, then downstream. Within the same direction of travel, inner lanes are numbered before outer lanes. If the target is not within a lane, the value is 0xFF. An invalid value is represented by 0x00.
3	Target type	UT	1	0X00—not used 0X01—non-motor 0X02—car 0X03—bus
4	Target length	UT	1	Vehicle body length, unit: meters Range: 0 to 25.5 meters Value 0 indicates invalid data 1 decimal place is reserved, with a resolution of 0.1 meters

5	Target width	UT	1	Vehicle body width, unit: meters Range: 0 to 25.5 meters Value 0 indicates invalid data 1 decimal place is reserved, with a resolution of 0.1 meters
6	Target height	UT	1	Vehicle body height, unit: meters Range: 0 to 25.5 meters Value 0 indicates invalid data 1 decimal place is reserved, with a resolution of 0.1 meters
7	Reserved	UT	3	0xFFFFFF
8	Target yaw angle	US	2	The current heading direction of the target in the geographical sense. The value range is 0 to 3599, representing 0 to 359.9 degrees. North is 0 degrees, and calculations proceed clockwise. The resolution is 0.1 degrees.
9	X-coordinate	S	2	X-coordinate of the target object relative to the radar coordinate system, unit: meters. Resolution: 0.01 meters.
10	Y-coordinate	US	2	Y-coordinate of the target object relative to the radar coordinate system, unit: meters. Resolution: 0.01 meters.
11	X-axis	S	2	X-axis velocity of the detected object relative to the radar coordinate

	velocity			system, unit: meters per second.
12	Y-axis velocity	S	2	Y-axis velocity of the detected object relative to the radar coordinate system, unit: meters per second. Resolution: 0.01 meters per second.
13	Velocity	S	2	Converted velocity of the detected object, unit: kilometers per hour. Resolution: 0.01 kilometers per hour. Positive value indicates moving away from the radar; negative value indicates moving closer to the radar.
14	Acceleration of the target in the direction of motion	S	2	Acceleration of the detected object in the direction of motion, unit: meters per second squared. Range: (-15, 15). Resolution: 0.01 meters per second squared.
15	X-axis acceleration	S	2	X-axis acceleration of the detected object relative to the radar coordinate system, unit: meters per second squared. Range: (-15, 15). Resolution: 0.01 meters per second squared.
16	Y-axis acceleration	S	2	Y-axis acceleration of the detected object relative to the radar coordinate system, unit: meters per second squared. Range: (-15, 15). Resolution: 0.01 meters per second squared.
17	Longitude	L	4	Longitude of the target coordinate point is defined by longitude values,

	of the target coordinate point			where positive values represent East longitude and negative values represent West longitude. Range: (-1799999999 to 1800000001) Unit: 1/10 microdegree, resolution: 1e-7° Providing a range of -1800000000 to 1800000000 to cover positive and negative 180 degrees.
18	Latitude of the target coordinate point	L	4	Latitude of the target coordinate point is defined by latitude values, where positive values represent North latitude and negative values represent South latitude. Range: (-900000000 to 900000001) Unit: 1/10 microdegree, resolution: 1e-7° Providing a range of positive and negative 90 degrees.

1.3.6 Traffic flow statistics data (0x03：TrafficData)

NO.	Name	Type	Bytes	Description
1	Statistical period	US	2	The latest unit: 1 second
2	Lane to	US	2	The target coordinates are located in the specific lane number set by the

	which the target belongs			user. The radar monitors specific lane numbers using the following rules: For single-lane roads: - Upstream: 01 - Downstream: 03 For roads with more than two lanes: - Upstream (closer to the radar): Lane numbers are consecutively assigned from inner (innermost lane) to outer (outermost lane), starting from 11. - Downstream (away from the radar): Lane numbers are consecutively assigned from inner (innermost lane) to outer (outermost lane), starting from 31. The arrangement rule for lane numbers is as follows: first upstream, then downstream. Within the same direction of travel, inner lanes are numbered before outer lanes. For roundabout lane numbers, they are consecutively assigned from

				inner to outer, starting from 51. For channelized lane numbers, they are consecutively assigned from inner to outer, starting from 71. For exit lane numbers, they are consecutively assigned from inner to outer, starting from 91. If the target is not within a lane, the value is 0xFF. An invalid value is represented by 0x00.
3	Monitoring location	US	2	Distance in the Y direction relative to the stop line, with a resolution of 0.1 meters.
4	Minor traffic flow	US	2	Vehicles
5	Major traffic flow	US	2	Vehicles
6	Heavy-duty vehicle flow	US	2	Vehicles
7	Total flow	US	2	Vehicles

8	Average vehicle speed	US	2	Resolution: 0.1 kilometers per hour
9	Headway	US	2	seconds
10	Virtual loop occupancy time	US	2	Percentage, resolution: 0.1
11	Maximum queue length	US	2	Resolution: 0.1 meters PS: Queue length starts from the stop line

2. Communication Protocol for Video Integrated Radar Models

Note: The following communication protocol is for video integrated radar models including ClairWav-T24SC/T24LC/T80LC.

2.1 Communication Protocol

1. To ensure real-time and reliable data transmission, the communication protocol uses the standard TCP protocol. The radar functions as either a TCP client or server, with each radar establishing a single TCP connection with the receiving device.

2. Data is transmitted in network byte order.

2.2 Data Packet Format

Each data packet consists of a header, a data body, and a footer.

1. If the server does not receive radar data for 20 seconds, it will disconnect the TCP connection. When the radar sends data again, it must re-initiate the connection request.

2. Even if no targets are detected, the radar should periodically report target trajectory data according to the data frame format, with the "Target Data" field left empty.

2.2.1 Data Frame Format

NO,	Name	Byte	Description
1	Header	4	55 AA 55 BB
2	Data Frame Types	1	0x01：ObjectData 0x02：RegionData 0x03：TrafficData 0x04：LaneStatusData 0x05：PassData
3	Checksum	1	Sequence numbers 5 to 7 participate in the checksum.
4	Reserved	2	
5	Device ID	20	Obtained from device installation parameters.
6	Data Timestamp	8	UTC milliseconds since 1970.
7	Number of Data Entries	2	N
8	Target Data	N*Length	
9	Packet Footer	4	55 CC 55 DD

2.2.2 Data Length

NO.	Bit15	Bit14	Bit13	Bit12	Bit11	Bit10	Bit9	Bit8
Function	Length[15:8] High 8 bits							
NO.	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Function	Length[7:0] Low 8 bits							

2.2.3 Device ID

NO.	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Function	DEV_ID							
NO.	Byte9	Byte10	Byte11	Byte12	Byte13	Byte14	Byte15	Byte16
Function	DEV_ID							
NO.	Byte17	Byte18	Byte19	Byte20				
Function	DEV_ID							

The device number is a maximum of 20 bytes, taken from the device number in the device installation parameters. Each byte represents the ASCII code of a character.

For example. Device ID is: 0000001

DEV_ID：0x30 0x30 0x30 0x30 0x30 0x30 0x31

NO.	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Function	0x30	0x30	0x30	0x30	0x30	0x30	0x31	0x00
NO.	Byte9	Byte10	Byte11	Byte12	Byte13	Byte14	Byte15	Byte16
Function	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00
NO.	Byte17	Byte18	Byte19	Byte20				
Function	0x00	0x00	0x00	0x00				

2.2.4 Data Timestamp

Adopting Unix timestamp, the number of milliseconds since January 1, 1970 UTC.

2.2.5 Target Data (0x01: ObjectData)

NO,	Name	Byte	Description
1	Target ID	10	The first 8 bytes represent the timestamp when the target was generated, and the last 2 bytes are the cyclic ID. Cyclic ID allocation range: 0 to 65535.
2	Target Lane	1	The target's coordinate point is located within the specific lane number set by the user.

			Radar monitoring specific lane numbering rules are as follows: - Single Lane Code Rules: - Upstream: 01 - Downstream: 03 - Multi-Lane Road Code Rules - Upstream (closest to the radar): Lanes are numbered sequentially from the inner lane (inner lane) to the outer lane (outer lane) as 11, 12, 13, etc. - Downstream (farthest from the radar): Lanes are numbered sequentially from the inner lane (inner lane) to the outer lane (outer lane) as 31, 32, 33, etc. Lane number arrangement rules: upstream lanes are listed first, followed by downstream lanes. Within the same direction of travel, inner lanes are listed before outer lanes. - If the target is not within any lane, the value is set to 0xFF. - Invalid values are set to 0x00.
3	Target Type	1	0X00—other 0X01—bicycle

			0X02—motorcycle 0X03—tricycle 0X04—bus 0X05—van 0X06—car 0X07—SUV 0X08—large truck 0X09—medium truck 0X0A—light truck 0X0B—dangerous goods cars 0X0C—engineering vehicles 0X0D—person 0X0E—medium bus
4	Color	1	0X00—other 0X01—white 0X02—gray 0X03—yellow 0X04—pink 0X05—red

			0X06—purple 0X07—green 0X08—blue 0X09—brown 0X0A—black
5	Plate number	12	
6	X Coordinate	2	The unit is in meters, with a resolution of 0.1 meters.
7	Y Coordinate	2	The unit is in meters, with a resolution of 0.1 meters.
8	Speed	2	The unit is in meters per second (m/s), with a resolution of 0.1 m/s. Positive values indicate movement away from the radar, while negative values indicate movement towards the radar.
9	X-axis in the image.	2	Unit: Pixels Invalid Value: -1
10	Y-axis in the image.	2	Unit: Pixels Invalid Value: -1
11	Target Pixel Height	2	Unit: Pixels Invalid Value: -1
12	Target Pixel Width	2	Unit: Pixels Invalid Value: -1

13	Target Azimuth Angle	2	Resolution: 0.1 degrees.
14	Vehicle Length	1	Unit: meters (m) Resolution: 0.1 meters.
15	Vehicle Width	1	Unit: meters (m) Resolution: 0.1 meters.
16	Vehicle Height	1	Unit: meters (m) Resolution: 0.1 meters.
17	Parking Status	1	1. Parked. 0. Not Parked.
18	X Direction Speed	2	Unit: meters per second (m/s) Resolution: 0.1 m/s.
19	Y Direction Speed	2	Unit: meters per second (m/s) Resolution: 0.1 m/s.
20	Target Motion Direction Acceleration	2	The acceleration of the target's motion direction is measured in meters per second squared (m/s^2), with a value range of (-15, 15) and a resolution of 0.01 m/s^2.
21	X Axis Acceleration	2	The X-axis acceleration of the target relative to the radar coordinate system is measured in meters per second squared (m/s^2), with a value range of (-15, 15) and a resolution of 0.01 m/s^2.

22	Y Axis Acceleration	2	The Y-axis acceleration of the target relative to the radar coordinate system is measured in meters per second squared (m/s^2), with a value range of (-15, 15) and a resolution of 0.01 m/s^2.
23	Longitude	4	Unit: 1/10 microdegree Resolution: 1e-7°
24	Latitude	4	Unit: 1/10 microdegree Resolution: 1e-7°
25	Reserved	2	

2.2.6 Regional Statistical Data (0x02: RegionData)

NO.	Name	Type	Bytes	Description
1	Statistical Period	US	2	Unit: Seconds
2	Direction of Belonging	US	2	1. North 2. East 3. South 4. West 5. Northeast

				6. Southeast 7. Northwest 8. Southwest
3	Left Turn Percentage	US	2	Percentage, with a resolution of 0.1.
4	Straight Percentage	US	2	Percentage, with a resolution of 0.1.
5	Right Turn Percentage	US	2	Percentage, with a resolution of 0.1.
6	Reserved	US	2	

2.2.7 Traffic Flow Statistical Data (0x03：TrafficData)

NO.	Name	Bytes	Description
1	Statistical Period	2	Latest Unit: 1 Second
2	Target Lane	2	The target's coordinate point is located within the specific lane number set by the user. Radar monitoring specific lane numbering rules are as follows:

			- Single Lane Code Rules: - Upstream: 01 - Downstream: 03 - Multi-Lane Road Code Rules: - Upstream (closest to the radar): Lanes are numbered sequentially from the inner lane (inner lane) to the outer lane (outer lane) as 11, 12, 13, etc. - Downstream (farthest from the radar): Lanes are numbered sequentially from the inner lane (inner lane) to the outer lane (outer lane) as 31, 32, 33, etc. Lane number arrangement rules: upstream lanes are listed first, followed by downstream lanes. Within the same direction of travel, inner lanes are listed before outer lanes. - Roundabout Lane Numbering: Lanes are numbered sequentially from the inner lane to the outer lane as 51, 52, 53, etc. - Channelized Lane Numbering: Lanes are numbered sequentially from the inner lane to the outer lane as 71, 72, 73, etc.

			- Exit Lane Numbering: Lanes are numbered sequentially from the inner lane to the outer lane as 91, 92, 93, etc. - If the target is not within any lane, the value is set to 0xFF. - Invalid values are set to 0x00.
3	Monitoring Location	2	Y-direction distance relative to the stop line, with a resolution of 0.1 meters.
4	Bicycle Flow	2	0x01 — Bicycle Unit: Units (vehicles)
5	Motorcycle Flow	2	0x02 — Motorcycle Unit: Units (vehicles)
6	Tricycle Flow	2	0X03 — Tricycle Unit: vehicles
7	Bus Flow	2	0X04—Bus Unit: Vehicles.
8	Van Flow	2	0X05 – Van Unit: Vehicles
9	Car Flow	2	0X06—Car 0X00—Other

			Unit: Vehicles.
10	SUV Flow	2	0X07 – SUV Unit: Vehicles
11	Large Truck Flow	2	0X08 – Large Truck Unit: Vehicles
12	Medium Truck Flow	2	0X09 – Medium Truck Unit: Vehicles
13	Light Truck Flow	2	0X0A – Light Truck Unit: Vehicles
14	Dangerous Goods Car Flow	2	0X0B – Dangerous Goods Cars Unit: Vehicles
15	Engineering Vehicles Flow	2	0X0C – Engineering Vehicles Unit: Vehicles
16	Pedestrian Flow	2	0X0D – Pedestrians Unit: Person
17	Medium Bus Flow	2	
18	Total Flow	2	Unit: Vehicles
19	Average vehicle speed	2	Resolution 0.1 km/h
20	Headway time	2	Seconds

21	Virtual loop time occupancy rate	2	Percentage, resolution 0.1
22	Maximum queue length	2	Resolution 0.1 m PS: queue length starts from the stop line.
23	Lane space occupancy rate	2	Percentage, resolution 0.1
24	Vehicle spacing	2	Resolution 0.1
25	Traffic density	2	Resolution 0.1
26	Reserved	2	

2.2.8 Lane Status Data (0x04: LaneStatusData)

NO.	Name	Type	Bytes	Description
1	Lane NO.	US	2	Road code rules for lanes: For upward traffic (toward the radar), lanes are numbered consecutively from the inner (inner lane) to the outer (outer lane) as 11, 12, 13, etc. For downward traffic (away from the radar), lanes are also numbered consecutively from the inner (inner lane) to the outer (outer lane) as 31, 32, 33, etc. Lane numbering rules specify that upward lanes are listed first, followed by downward lanes, with inner lanes listed before outer lanes in the

				same direction. If the target is not in the lane, it is represented as 0xFF. Invalid values are represented as 0x00.
2	Queue length	US	2	Relative Y-axis distance to the stop line, resolution accuracy 0.1 m.
3	Queue head	US	2	Relative Y-axis distance to the stop line, resolution accuracy 0.1 m.
4	Queue tail	US	2	Relative Y-axis distance to the stop line, resolution accuracy 0.1 m.
5	Number of vehicles in queue	US	2	Vehicles
6	Whether it exceeds the limit	T	1	1. Exceeded limit. 0. Not exceeded limit.
7	Whether it overflows	T	1	1. Overflow. 0. No overflow.
8	Real-time vehicle spacing	US	2	Resolution: 0.1m
9	Number of vehicles online	US	2	Vehicles
10	Average speed	US	2	Resolution 0.1 km/h
11	85% speed	US	2	Resolution 0.1 km/h
12	Lead vehicle	US	2	Relative Y-axis distance to the stop line, resolution accuracy 0.1 m,

	position			invalid value 0xFFFF.
13	Lead vehicle speed	US	2	Resolution 0.1 km/h
14	Trailing vehicle position	US	2	Relative Y-axis distance to the stop line, resolution accuracy 0.1 m, invalid value 0xFFFF.
15	Trailing vehicle speed	US	2	Resolution 0.1 km/h
16	Space occupancy rate	US	2	Percentage, resolution 0.1
17	Reserved	US	2	

2.2.9 Real-time passing vehicle data (0x05: PassData)

NO.	Name	Type	Bytes	Description
1	Lane NO.	US	2	Road code rules for lanes: For upward traffic (toward the radar), lanes are numbered consecutively from the inner (inner lane) to the outer (outer lane) as 11, 12, 13, etc. For downward traffic (away from the radar), lanes are also numbered consecutively from the inner (inner lane) to the outer (outer lane) as 31, 32, 33, etc.

				Lane numbering rules specify that upward lanes are listed first, followed by downward lanes, with inner lanes listed before outer lanes in the same direction. If the target is not in the lane, it is represented as 0xFF. Invalid values are represented as 0x00.
2	Cross-section position	US	2	Relative Y-axis distance to the stop line, resolution accuracy 0.1 m.
3	Real-time cross-section vehicle speed	US	2	Resolution 0.1 km/h
4	Cross-section headway time	US	2	Seconds
5	Passing time	US	8	Reference 1.3.4 data timestamp definition.
6	Occupancy duration	US	2	Seconds
7	Cross-section occupancy status	S	1	1. Entering. 0. Exiting.
8	Target Type	S	1	0X00—other

				0X01—bicycle 0X02—motorcycle 0X03—tricycle 0X04—bus 0X05—van 0X06—car 0X07—SUV 0X08—large truck 0X09—medium truck 0X0A—light truck 0X0B—dangerous goods cars 0X0C—engineering vehicles 0X0D—person 0X0E—medium bus
9	Reserved	T	3	

2.2.10 Traffic Events (0x06: Event)

NO.	Name	Bytes	Description

1	Event ID	8	
2	Lane NO.	2	Lane Numbering Rules for Roads with More Than One Lane: Uplink (closer to radar): Numbered consecutively from inside lane to outside lane as 11, 12, 13, ... Downlink (farther from radar): Numbered consecutively from inside lane to outside lane as 31, 32, 33, ... Lane numbering order: Uplink first, then downlink. For the same direction, inside lane first, then outside lane. If the target is not within a lane, set to 0xFF. Invalid value is 0x00.
3	Event Type	1	01: Abnormal Parking 02: Congestion and Slow Traffic 03: Wrong-Way Driving 04: Illegal Lane Change 05: Queue Exceeds Limit 06: Overflow 07: Speeding

			08: Occupying Emergency Lane 09: Unauthorized Entry
4	X-coordinate	2	The X-coordinate of the event location relative to the radar coordinate system, in meters, with a resolution of 0.01 m.
5	Y-coordinate	2	The Y-coordinate of the event location relative to the radar coordinate system, in meters, with a resolution of 0.01 m.
6	Longitude	4	Longitude value of the event coordinate point, with east longitude as positive and west longitude as negative. Range: (-1799999999 ~ 1800000001) Unit: 1/10 microdegree, resolution 1e-7° Provides a range of ±180 degrees, from -1800000000 to 1800000000.
7	Latitude	4	Latitude value of the event coordinate point, with north latitude as positive and south latitude as negative. Range: (-900000000 ~ 900000001) Unit: 1/10 microdegree, resolution 1e-7° Provides a range of ±90 degrees.
8	Plate Number	12	
9	Target Type	1	0X00—other 0X01—bicycle

			0X02—motorcycle 0X03—tricycle 0X04—bus 0X05—van 0X06—car 0X07—SUV 0X08—large truck 0X09—medium truck 0X0A—light truck 0X0B—dangerous goods cars 0X0C—engineering vehicles 0X0D—person 0X0E—medium bus
10	Start Time	8	Number of milliseconds since 1970 UTC
11	Last Time	2	Unit: 1 second