ITSDETECTOR

WimRadar

ITSDETECTOR 24L-1 (HT-MTTR-3-485-A)

Integration Manual

Precision in speed control that **transforms enforcement**

GRUPO PUMATRONIX

UMA EMPRESA DO GRUPO PUMATRONIX

REVISION 1.2.0 - 2025

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Changes History

Date	Revision	Updated content
01/15/2022	1.0	Initial Edition
04/09/2025	1.2.0	WimRadar identity update (SAD-905)

Summary

1. RS485 port

baud	115200
Data bits	8
Stop bits	1
Parity	No
Flow control	No

2. Protocol RS485

2.1. Data frame (The radar sends)

0xDB	
0x01	
Intra-frame byte length (include '0xDB'、'0x01'、'0xDC'、checksum) Note: Pre-transliteration length for the sender and post-transliteration length for the receiving.	
Frame number : 0~255	
Target 1	The high byte of the speed (The unit is 0.1km/h)
	The low byte of the speed (The unit is 0.1km/h)
	The high byte of the horizontal distance (The unit is 0.1m)
	The low byte of the horizontal distance (The unit is 0.1m)
	The high byte of the vertical distance (The unit is 0.1m)
	The low byte of the vertical distance (The unit is 0.1m)
	the echo energy
	The target's ID
Target 2	The high byte of the speed (The unit is 0.1km/h)
	The low byte of the speed (The unit is 0.1km/h)
	The high byte of the horizontal distance (The unit is 0.1m)
	The low byte of the horizontal distance (The unit is 0.1m)
	The high byte of the vertical distance (The unit is 0.1m)
	The low byte of the vertical distance (The unit is 0.1m)
	the echo energy
	The target's ID
Target n	The high byte of the speed (The unit is 0.1km/h)
	The low byte of the speed (The unit is 0.1km/h)
	The high byte of the horizontal distance (The unit is 0.1m)
	The low byte of the horizontal distance (The unit is 0.1m)
	The high byte of the vertical distance (The unit is 0.1m)
	The low byte of the vertical distance (The unit is 0.1m)
	the echo energy
	The target's ID
Checksum : Note: For the sending end is the checksum of the data before translation, for the receiving end is the checksum of the translated data. The checksum is the sum of all bytes except DB and DC and the result of the remainder of 256.	
0xDC	

The above frame format is sent when the radar detects a target or some targets, where the maximum number of targets n is 32. When the radar detects no target, it will send:

0xDB
0x01
0x06
Frame number : 0~255
Checksum : Note: For the sending end is the checksum of the data before translation, for the receiving end is the checksum of the translated data. The checksum is the sum of all bytes except DB and DC and the result of the remainder of 256.
0xDC

2.2. Radar mounting parameter (the upper computer sends)

0xDB
0x02
Intra-frame byte length (include '0xDB'、'0x02'、'0xDC'、checksum) . This byte has a fixed value of 11.
The high byte of radar horizontal deflection angle (The unit of this byte is 0.1 °.)
The low byte of radar horizontal deflection angle (The unit of this byte is 0.1 °.)
The high byte of radar installation height from ground (The unit of this byte is 0.1m)
The low byte of radar installation height from ground (The unit of this byte is 0.1m)
The high byte of the threshold
The low byte of the threshold
Checksum
0xDC

2.3. The reply of the radar mounting parameter (the radar sends)

0xDB
0x03
Intra-frame byte length (include '0xDB'、'0x03'、'0xDC'、checksum) . This byte has a fixed value of 11.
The high byte of radar horizontal deflection angle (The unit of this byte is 0.1 °.)
The low byte of radar horizontal deflection angle (The unit of this byte is 0.1 °.)
The high byte of radar installation height from ground (The unit of this byte is 0.1m)
The low byte of radar installation height from ground (The unit of this byte is 0.1m)
The high byte of the threshold
The low byte of the threshold
Checksum
0xDC

2.4. Parameter query (the upper computer sends)

0xDB
0x04
Intra-frame byte length. This byte has a fixed value of 5.
Checksum
0xDC

2.5. The reply of parameter query (the radar sends)

0xDB
0x05
Intra-frame byte length. This byte has a fixed value of 11.
The high byte of radar horizontal deflection angle (The unit of this byte is 0.1 °.)
The low byte of radar horizontal deflection angle (The unit of this byte is 0.1 °.)
The high byte of radar installation height from ground (The unit of this byte is 0.1m)
The low byte of radar installation height from ground (The unit of this byte is 0.1m)
The high byte of the threshold
The low byte of the threshold
Checksum
0xDC

2.6. Static target detection command (the upper computer sends)

0xDB
0x08
Intra-frame byte length. This byte has a fixed value of 5.
Checksum
0xDC

2.7. The reply of static target detection command (the radar sends)

0xDB
0x09
Intra-frame byte length. This byte has a fixed value of 5.
Checksum
0xDC

2.8. Radar reset command (the upper computer sends)

0xDB
0x0A
Intra-frame byte length. This byte has a fixed value of 5.
Checksum
0xDC

2.9. The reply of the radar reset command (the radar sends)

0xDB
0x0B
Intra-frame byte length. This byte has a fixed value of 5.
Checksum
0xDC

2.10. Query firmware information (the upper computer sends)

0xDB
0x64
Intra-frame byte length. This byte has a fixed value of 5.
Checksum
0xDC

2.11. The reply of query firmware information (the radar sends)

0xDB
0x65
Intra-frame byte length. This byte has a fixed value of 0x26.
Version number integer part
Decimal fraction part of version number
Hardware ID[0]-ID[19]
Software Compilation Time-year
Software Compilation Time-month
Software Compilation Time-data
Software Compilation Time-hour
Software Compilation Time-minute
Software Compilation Time-second
reserve
reserve
reserve
reserve
reserve
Checksum
0xDC

2.12. Lane setting (the upper computer sends)

0xDB
0x6A
Horizontal coordinate of the 1st lane (The unit of this byte is 0.1m)
Width of the 1st lane (The unit of this byte is 0.1m)
Width of the 2nd lane (The unit of this byte is 0.1m)
Width of the 3rd lane (The unit of this byte is 0.1m)
Checksum
0xDC

2.13. The reply of lane setting (the radar sends)

0xDB
0x6B
Horizontal coordinate of the 1st lane (The unit of this byte is 0.1m)
Width of the 1st lane (The unit of this byte is 0.1m)
Width of the 2nd lane (The unit of this byte is 0.1m)
Width of the 3rd lane (The unit of this byte is 0.1m)
Checksum
0xDC

2.14. Query lane setting (the upper computer sends)

0xDB
0x6C
Intra-frame byte length. This byte has a fixed value of 5.
Checksum
0xDC

2.15. The reply of query lane setting (the radar sends)

0xDB
0x6D
Horizontal coordinate of the 1st lane (The unit of this byte is 0.1m)
Width of the 1st lane (The unit of this byte is 0.1m)
Width of the 2nd lane (The unit of this byte is 0.1m)
Width of the 3rd lane (The unit of this byte is 0.1m)
Checksum
0xDC

2.16. Capture direction (the upper computer sends)

0xDB
0x6E
Intra-frame byte length. This byte has a fixed value of 0x06.
Capture direction (1 : Bi-direction, 2 : going, 3 : coming)
Checksum
0xDC

2.17. Reply of capture direction (the radar sends)

0xDB
0x6F
Intra-frame byte length. This byte has a fixed value of 0x06.
Capture direction (1 : Bi-direction, 2 : going, 3 : coming)
Checksum
0xDC

2.18. Query capture direction (the upper computer sends)

0xDB
0x70
Intra-frame byte length. This byte has a fixed value of 5.
Checksum
0xDC

2.19. The reply of query capture direction (the radar sends)

0xDB
0x71
Intra-frame byte length. This byte has a fixed value of 0x06.
Capture direction (1 : Bi-direction, 2 : going, 3 : coming)
Checksum
0xDC

2.20. Vehicle identification threshold (the upper computer sends)

0xDB
0x72
Intra-frame byte length. This byte has a fixed value of 0x0C.
High Byte of Energy Threshold for Large Vehicle Recognition
Low Byte of Energy Threshold for Large Vehicle Recognition
Number of times the energy is over the large car's threshold
High Byte of Energy Threshold for Vehicle Recognition
Low Byte of Energy Threshold for Vehicle Recognition
Number of times the energy is over the car's threshold
1 : Filter out non motor vehicles ; 0 : Retain non motor vehicles
Checksum
0xDC

2.21. The reply of vehicle identification threshold (the radar sends)

0xDB
0x73
Intra-frame byte length. This byte has a fixed value of 0x0C.
High Byte of Energy Threshold for Large Vehicle Recognition
Low Byte of Energy Threshold for Large Vehicle Recognition
Number of times the energy is over the large car's threshold
High Byte of Energy Threshold for Vehicle Recognition
Low Byte of Energy Threshold for Vehicle Recognition
Number of times the energy is over the car's threshold
1 : Filter out non motor vehicles ; 0 : Retain non motor vehicles
Checksum
0xDC

2.22. Query vehicle identification threshold (the upper computer sends)

0xDB
0x74
Intra-frame byte length. This byte has a fixed value of 5.
Checksum
0xDC

2.23. The reply of query vehicle identification threshold (the radar sends)

0xDB
0x75
Intra-frame byte length. This byte has a fixed value of 0x0C.
High Byte of Energy Threshold for Large Vehicle Recognition
Low Byte of Energy Threshold for Large Vehicle Recognition
Number of times the energy is over the large car's threshold
High Byte of Energy Threshold for Vehicle Recognition
Low Byte of Energy Threshold for Vehicle Recognition
Number of times the energy is over the car's threshold
1 : Filter out non motor vehicles ; 0 : Retain non motor vehicles
Checksum
0xDC

2.24. Radar capture distance setting (the upper computer sends)

0xDB
0xA0
Intra-frame byte length. This byte has a fixed value of 0x06.
Single byte, capture distance in meters
Checksum
0xDC

2.25. The reply of radar capture distance setting (the radar sends)

0xDB
0xA1
Intra-frame byte length. This byte has a fixed value of 0x06.
Single byte, capture distance in meters
Checksum
0xDC

2.26. Radar capture distance query (the upper computer sends)

0xDB
0xA2
Intra-frame byte length. This byte has a fixed value of 0x05.
Checksum
0xDC

2.27. The reply of Radar capture distance query (the radar sends)

0xDB
0xA3
Intra-frame byte length. This byte has a fixed value of 0x06.
Single byte, capture distance in meters
Checksum
0xDC

2.28. Radar working mode setting (the upper computer sends)

0xDB
0xA4
Intra-frame byte length. This byte has a fixed value of 0x06.
0x01: Single Byte Trigger;0x02: continuous trace
Checksum
0xDC

2.29. The reply of Radar working mode setting (the radar sends)

0xDB
0xA5
Intra-frame byte length. This byte has a fixed value of 0x06.
0x01: Single Byte Trigger;0x02: continuous trace
Checksum
0xDC

2.30. Radar working mode query (the upper computer sends)

0xDB
0xA6
Intra-frame byte length. This byte has a fixed value of 0x05.
Checksum
0xDC

2.31. The reply of Radar working mode query (the radar sends)

0xDB
0xA7
Intra-frame byte length. This byte has a fixed value of 0x06.
0x01: Single Byte Trigger;0x02: continuous trace
Checksum
0xDC

2.32. WiFi setting

0xDB
0x80
Intra-frame byte length. This byte has a fixed value of 0x0A.
0x00: enable wifi;0x01:disable wifi
Reserved
Reserved
Reserved
Reserved
Checksum
0xDC

3. Byte translation

If the original data packet contains 0xDB, 0xDC, and 0x21 bytes, it needs to be translated.

- Translate before sending data at the sending end:

Original	After translation
0xDB →	0x21 0xFA
0xDC →	0x21 0xFB
0x21 →	0x21 0xFC

- After the receiving end receives the data:

Original	After translation
0x21 0xFA →	0xDB
0x21 0xFB →	0xDC
0x21 0xFC→	0x21