LM10A

10km Laser Rangefinder Module

With single-time ranging and
continuous ranging function

PRODUCT FUNCTION

With single ranging and continuous ranging functions

With power-up/cycle/start-up self-test function

with the first and last target distance logic display function

With distance measurement times query function

Temperature alarm function

with over-current and over-voltage circuit protection function (design guarantee)

with software remote upgrade function: directly upgrade the software through the communication interface

PRODUCT PERFORMANCE INDEX

Item	Index	
Model	LM10A	
Operating wavelength	1535nm ±10nm	
Ranging range	20-15000m	
Range performance	13000m	Maximum range
	12000m	Big target,Reflectivity: 60 %, observer visibility 25 km
	10000m	2.3 × 2.3 m target size,Reflectivity: 30 %, observer visibility 15 km
	6000m	People target,Reflectivity: 10 %, observer visibility 10 km
Communication Interface	RS422	
Humidity	⩽ 80%	
Ranging accuracy	±1m	
Accuracy rate	⩾98%	
Divergence angle	⩽0.5mrad	
Ranging frequency	1~5hz	
Size	⩽69mm×57mm×45mm	
Voltage	5.6-8.4V	
Power consumption	Average power consumption ⩽3W, peak power consumption ⩽6W	
Working temperature	-40°C～+60°C	
Storage temperature	-45°C～+70°C	
Weight	⩽130g	

Note: All performance indicators and interfaces can be customized according to requirements

Applications for the STA-H10X Laser Rangefinder Module

Thermal imaging, night vision and other handheld mobile devices

Border observation and surveillance systems

Sensor kits for UAV pods and UGVs

Ranging mode and ranging time

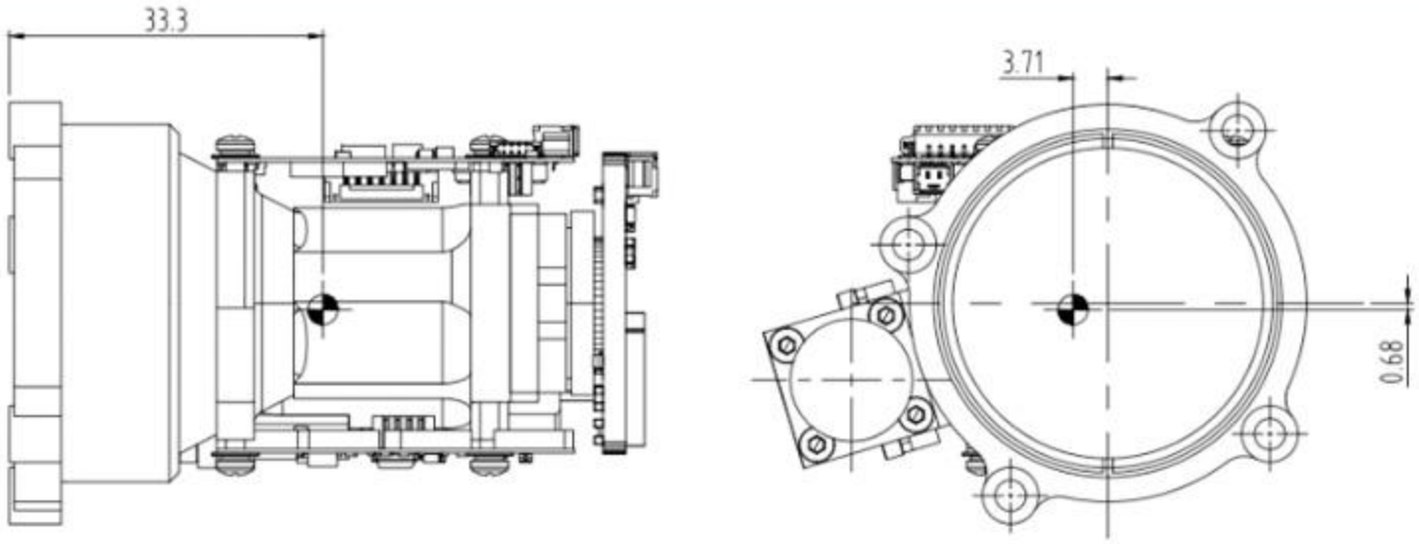
a) Single maximum continuous ranging time: ⩾35min;

b) The maximum interval time for continuous distance measurement again: ⩽15s.

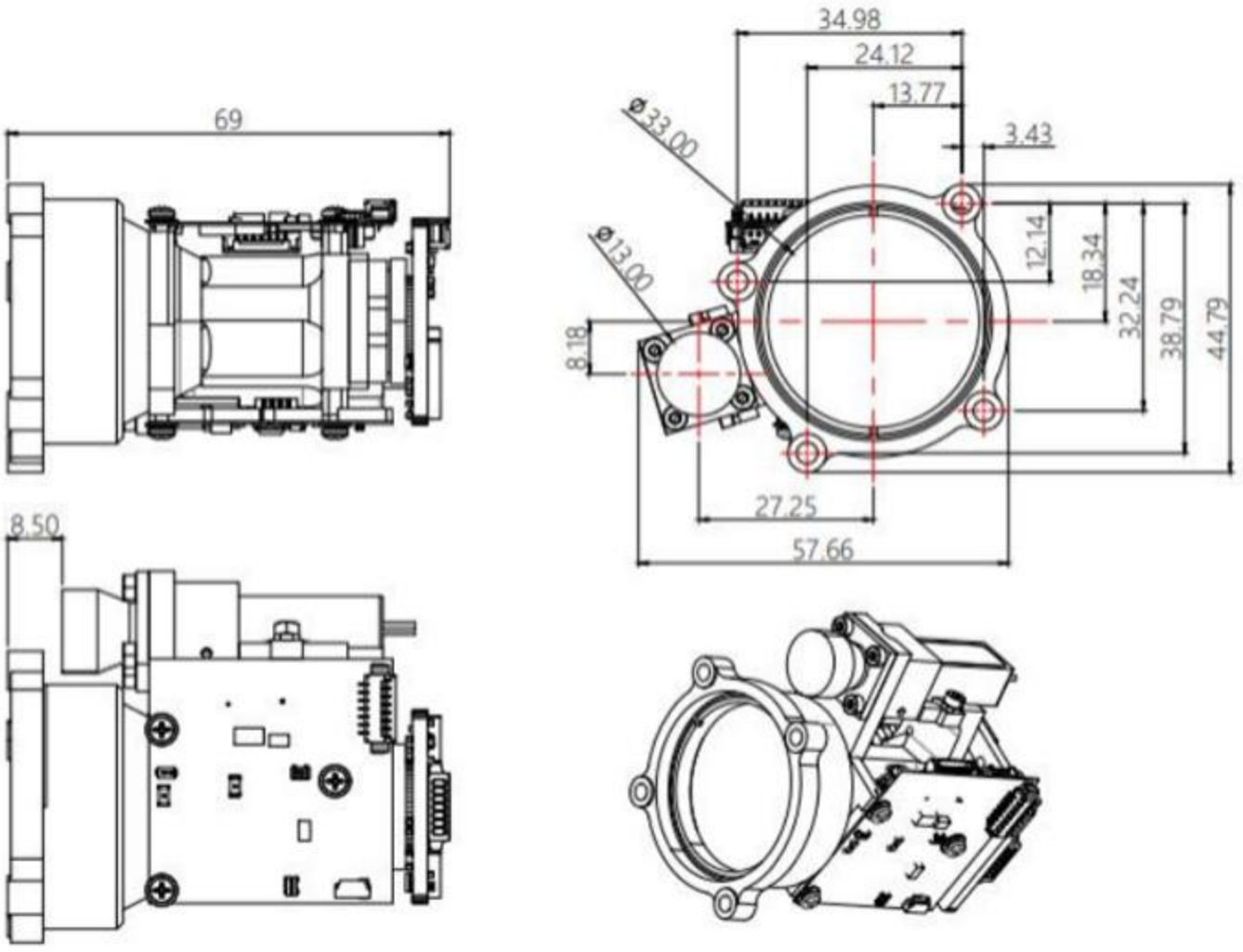
Laser optical axis stability ⩽ 0.1mrad (full temperature range);

Verticality of the launching optical axis to the installation reference: ⩽2mrad (design guarantee);

Centre of gravity

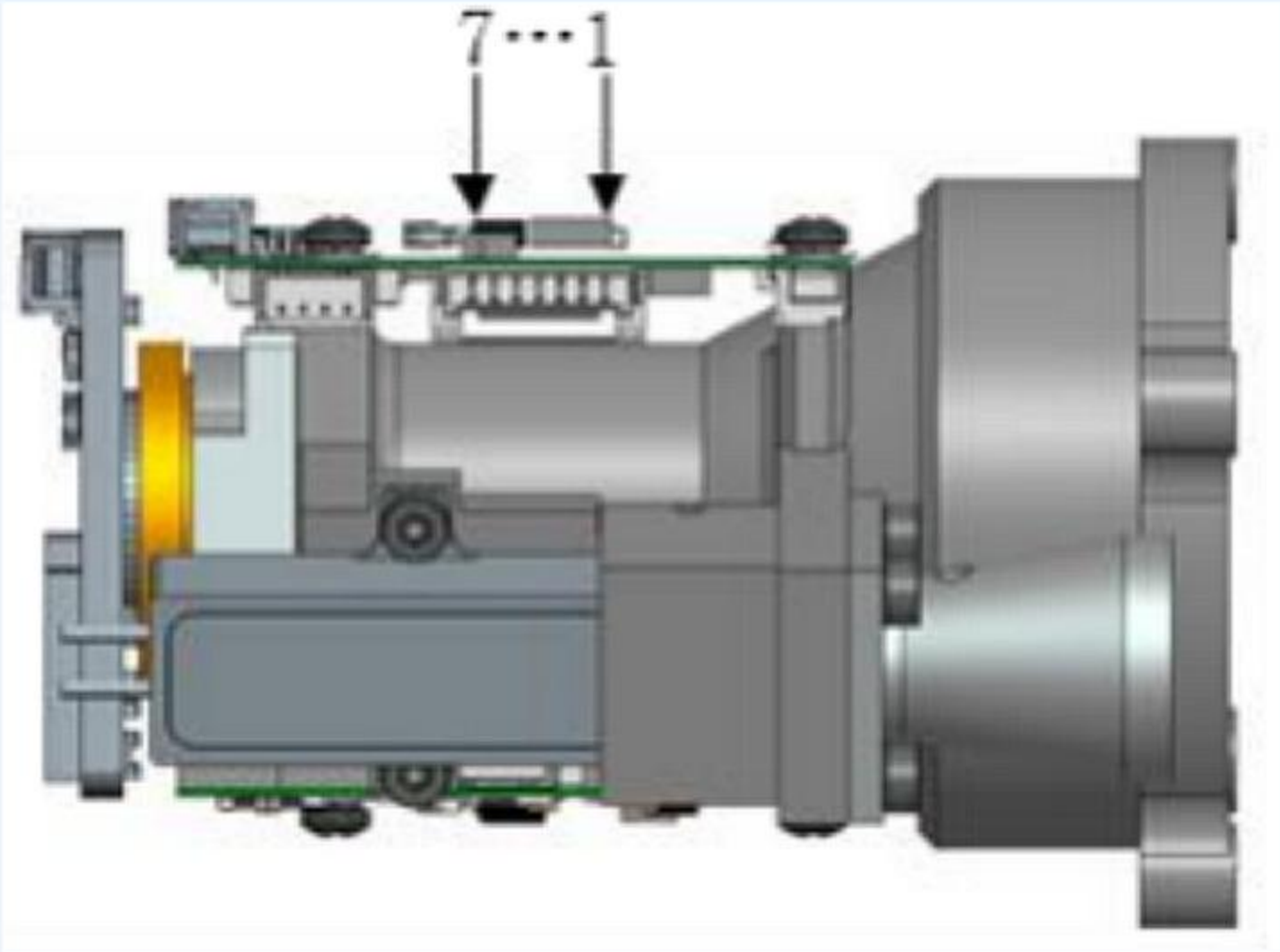


Structure installation interface



Electrical Interfaces

The laser rangefinder is connected externally with a CK connector (Model: A1257WR-S-7P).Electrical Interface.



The laser rangefinder interface is defined below

Terminal number	Serial No.	Connector Model	Signal Definition (RS422)	Other
X4	X4-1	A1257WR-S-7P	+12V	Laser rangefinder interface
	X4-2		GND	
	X4-3		RS422-A	
	X4-4		RS422-B	
	X4-5		RS422-Y	
	X4-6		RS422-Z	
	X4-7		RS422-GND	

COMMUNICATION PROTOCOL

Communication speed and format

Format standard	115200(out of factory)N, 8, 1，upper bits priority for multi-bytes data
Data type	Char one byte、int two byte、long four byte; Signed(default)、unsigned

Packet format

①start character		②data length	③data content	④sum check
0xEB	0x90	unsigned char	unsigned char[]	unsigned char
"④sum check" refers to summing up all content except for verification and taking the lower 8 bit				
Command data and response data are all within "③data content"				

Command data format

Target device code	Command code	Additional data of a certain length
unsigned char	unsigned char	unsigned char[]
Time interval between characters should be ⩽20ms。		
Normal command code is forbidden to use 0XFF。		

Response data format

Self device code	Response code	Additional data of a certain length
unsigned char	unsigned char	unsigned char[]
Device should respond within in 1s and the time interval between characters should be⩽20ms。		
All commands on bus serial port will respond.		

Device code

Device name	Device code
Laser rangefinder	0x03

Response code

type	Response code	Additional date	meaning	clarification
Normal response	Command code	See attached	Executed successfully	Command is handled normally. Additional data refers to device command.

LASER SELF-CHECK

Sending to laser rangefinder

byte	0	1	2	3	4	5
Description	0xEB	0x90	②data length (2)	0x03	0x01	Check_sum

Rangefinder sending back

Byte	0	1	2	3	4	5	6	7	8	9
Description	0xEB	0x90	②data length (12)	0x03	0x01	Self-check	Stand by	Stand by	Stand by	Stand by
10		12	13	14	15					
Stand by	Stand by	Stand by	Stand by	Stand by	Check_sum					

Self-check definition

Bit	D7	D6	D5	D4	D3	D2	D1	D0
description	System status: 0: normal 1:abnormal					Temperature alarm: 0: normal 1:alarm	Bias voltage fault 0: normal 1:fault	Counter malfunction: 0: normal 1:fault

SINGLE MEASUREMENT

Sending to laser rangefinder

byte	0	1	2	3	4	5
Description	0xEB	0x90	②data length (2)	0x03	0x02	Check_sum

AUTO MEASUREMENT

Sending to laser rangefinder

byte	0	1	2	3	4	5
Description	0xEB	0x90	②data length	0x03	0x03	Check_sum
			(2)			

STOP RANGING

Sending to laser rangefinder

byte	0	1	2	3	4	5
Description	0xEB	0x90	②data length (2)	0x03	0x04	Check_sum

SENDING BACK DISTANCE DATA

Single measurement and auto measurement data will be sent back based ranging frequency.

byte	0	1	2	3	4	5	6	7	8	9
Description	0xEB	0x90	②data length (12)	0x03	Single measure: 0x02 Auto measure: 0x03 Standby: 0x00	status	First target measured value upper 8 bits of integer	First target lower 8 bits of integer	First target decimal bytes	End target upper 8 bits of integer
10		12	13	14	15					
End target lower 8 bits of integer	End target decimal bytes	standby	standby	standby	Check_sum					

Note: range finder value with 2 decimal places

Status definition

bite	D7	D6	D5	D4	D3	D2	D1	D0
description	System status: 0: normal 1: abnormal	Front power switch: 0: off 1: on	LD power switch: 0: off 1: on	Bias voltage switch: 0: off 1: on	Working status: 0:off 1: working	Echo status: 0: no 1: yes	Main wave status: 0: no 1 yes	Temperature alarm: 0: no alarm 1: alarm

SETTING FREQUENCY

Sending to laser rangefinder

byte	0	1	2	3	4	5	6
Description	0xEB	0x90	②data length (3)	0x03	0x05	1-5:1-5Hz	Check_sum

Setting parameters:

Laser rangefinder sending back

byte	0	1	2	3	4	5	6	7	8	9
description	0xEB	0x90	②data length (12)	0x03	0x05: set frequency 0x08:check setting value	standby	standby	standby	standby	standby
10	11	12	13	14	15	16	17	18	19	20
standby	Ranging frequency 1-5:1-5Hz	Main version no.	Minor version no.	Maintenance no.	Check_sum					

CHECK SETTING VALUE

Sending to laser rangefinder

Byte	0	1	2	3	4	5
Description	0xEB	0x90	②data length (2)	0x03	0x08	Check_sum

Rangefinder sending back:
Refers to setting parameter

CHECK LASER EMITTING TIMES

Sending to laser rangefinder

byte	0	1	2	3	4	5
Description	0xEB	0x90	②data length (2)	0x03	0x07	Check_sum

Laser rangefinder sending back

Byte	0	1	2	3	4	5	6	7	8	9
Description	0xEB	0x90	②data length (12)	0x03	0x07	Cumulative counting D31-D24	Cumulative counting D23-D16	Cumulative counting D15-D8	Cumulative counting D7-D0	Standby
10	11	12	13	14	15	16	17	18	19	20
Standby	Standby	Standby	Standby	Standby	Check_sum					

When working, laser rangefinder autonomously sends back distance data and status to upper computer; When standby, rangefinder doesn't send back information.

产品展示