

CA109

Specification & Instruction Book



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1. INTRODUCTION

CA109 is designed as a compact and reliable laser distance measuring sensor. The phase shifting reflectorless technology gives the good accuracy and response time in distance measuring. It is a compact and customizable LDM sensor.

Features

- Compact and fit for most heavy duties.
- High speed measuring up to 10HZ. (Adjustable)
- Digital output with UART, RS232, or RS485
- Non-contact measuring with low power consumption.

Application

- Robot eyes distance measuring
- Positioning and monitoring of objects
- Security application movement detections
- Level and elevator measuring

2. PRECAUTION

- Read these instructions before commissioning the CA109 in order to familiarize yourself with the device and its functions.
- Mounting and electrical installation are to be performed only by qualified technicians.
- Electrical connections between CA109 and other devices may only be created or fixed when there is no power to the system. Otherwise, the devices may be damaged
- Conducting cross sections of the supply cable from the customer's power system should be designed in accordance with the applicable standards.
- Use the device only under permitted environmental conditions (e.g. temperature, grounding potential)
- The total continuous output of the beams is under condition of class 2
- Do not operate the device above the maximum rating condition, even momentarily. It may cause unexpected permanent damage to the device.
- Do not directly look into the laser beam bare-eyed. The laser beam may cause severe damage to human eyes.
- Optical Lens is made of glass. Do not contaminate lens with dirt, oil or chemical.

3. SPECIFICATION

Model	CA109A	CA109B	CA109C
Single measuring range*	0.05m~30m	0.05m~50m	0.05m~70m
Continuous measuring range*	0.05m~30m	0.05m~50m	0.05m~70m
Measuring Frequency**	0.5~1 second for each measure		
Typical Accuracy*	±2mm		
Accuracy With CA6****	±1mm		
Power	9V~28V ±0.2V (DC Jack)		
Warm-up Time	<5 seconds		
Laser output power	0.6mW~0.95mW		
Operation Temperature	-5°C~40°C		
Storage Temperature	-20°C~60°C		
Output Interface***	RS-232	RS-485	

* Applies for well reflectivity target (e.g: Kodak white board), low background illumination, 25°C, with a low reflectivity target, could decrease measuring range and increased errors which may defer by target and environment situation, tolerances apply from 0.05 m to 10 m with a confidence level of 95%. The maximum tolerance may deteriorate to 0.25 mm/m after 10 meters.

** Measuring range, accuracy is deeply related with measuring speed. A higher measuring frequency will series effect range and accuracy, please do contact with our reps for more discussion.

*** Need to be decided prior order.

**** Work with target CA6 target plate, under favorable condition, tolerances apply from 0.05 m to 10 m with a confidence level of 95%. The maximum tolerance may deteriorate to 0.1 mm/m after 10 meters

4. PROTOCOL & DATA FORMAT

I. Protocol :: RS232 , 9600bps

II. UART Interface

RS-232

DB9 Female	1	2	3	4	5	6	7	8	9
		RXD	TXD		GND				

RS485

DB9 Female	1	2	3	4	5	6	7	8	9
	D+	D-			GND				

RS422

DB9 Female	1	2	3	4	5	6	7	8	9
	D+	D-			GND				

Actions: 1 ASCII Char

1. 0x6C (ASCII = l): Laser Power On
2. 0x6D (ASCII = m): Measure Trigger
3. 0x6E (ASCII = n): Single Measure
4. 0x63 (ASCII = c): Continuous Measure
5. 0x73 (ASCII = s): Laser Power Off or Stop Continuous Measure
6. 0x61 (ASCII = a): Launch Area Measuring Procedure
7. 0x64 (ASCII = d): Launch Dimension Measuring Procedure
8. 0x78 (ASCII = x): Launch Indirectly Measuring by Pythagoras

III. Output:

Outputs are totally 8 ASCII Chars, Unit is Meter:

Output in meter	Char 1	Char 2	Char 3	Char 4	Char 5	Char 6	Char 7	Char 8
Single Measure= 12.345	#	A	1	2	.	3	4	5
Area Length = 5.000	#	B	0	5	.	0	0	0

Area Width = 20.000	#	C	2	0	.	0	0	0
Area = 100.00	#	D	1	0	0	.	0	0

Char 2 – Function Table:

Function	Char 2	Function	Char 2
Single Measure	A	Pythagoras 1	I
Area Length	B	Pythagoras2	J
Area Width	C	Pythagoras3	K
Area	D	Error code	Z
Dimension Length	E		
Dimension Width	F		
Dimension Height	G		
Dimension	H		

IV. Error code:

Error code has totally 8 ASCII Chars,

#Zerror1: Out of range

#Zerror2: Low reflections.

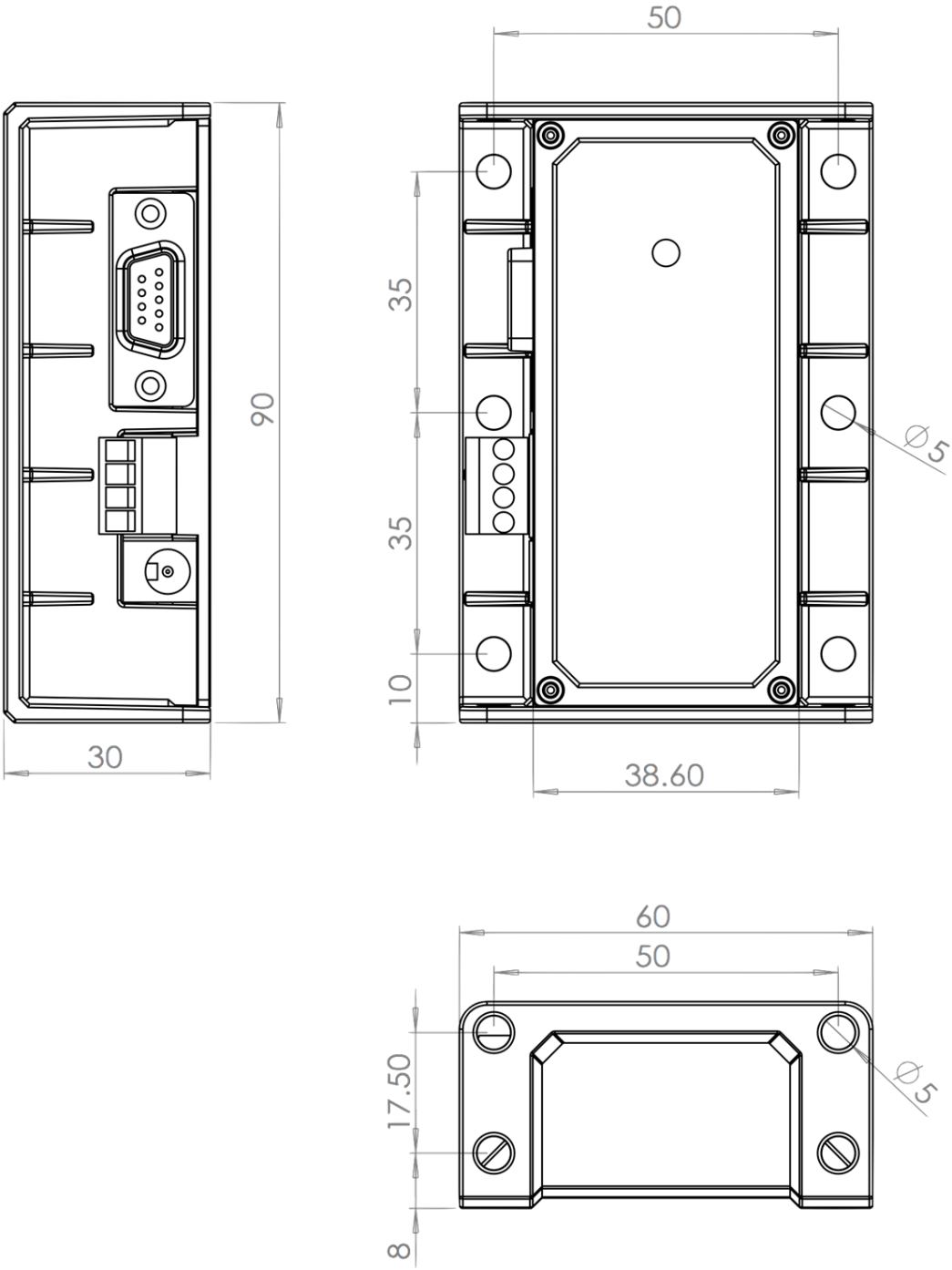
#Zerror3: Out of display range

#Zerror4: Pythagoras Calculation Error (Formula Error)

#Zerror5: Low input voltage.

#Zerror6: Out of operation temperature

5. DIMENSION



6. CONNECTION

