

# CT1/CS Series INSTRUCTION MANUAL

Thank you for your purchasing our product. Please read this instruction manual carefully before using to ensure the correct usage of this product. Please keep this instruction manual for future reference.

## Customer Service

### LINE SEIKI CO., LTD.

Address: 37-7 Chuo-cho, 2-Chome  
Meguro-ku, Tokyo 152-0001 Japan  
Contact: Tel: +81-3-37165151 Fax: +81-3-37104552  
E-mail: webtrade@line.co.jp  
Web: http://www.lineseiki.com

**WARNING** Misuse of this device may lead to injury to the user or damage to the device.

### Attention

- Do not use this device near machines that emit strong electromagnetic fields or objects that store static electricity.
- Do not drop or subject this device to strong impact.
- Do not use this device on rollers with high temperature or where it will be exposed to solvent, oil and water.
- Do not use or store this device where it will be exposed to direct sunlight, dust, high temperature and high humidity.
- Do not use this device where it will be exposed to vibration to avoid incorrect measuring or fault.
- Do not use organic solvents such as thinners etc. to clean this device.
- Do not attempt to disassemble or modify this device.
- Internal parts may be destroyed if a voltage outside the rated voltage is applied.
- Do not touch the conductive part of leadwires while power is being applied.

## 1. Models

Model	Sensor	Unit	Speed	Weight	Torque	Proper Counter	
CT1-3:1	Microswitch	1m [yard]	240meter [yard]/minute	700g [25oz.]	0.015N m (153gf-cm) [2.12ozf-in]	Electronic Counter Electromagnetic Counter	
CT1-3:10		0.1m [yard]	24meter [yard]/minute	710g [25oz.]			
CT1-3:1A		1 Non-contact Output (Voltage Output)	1m [yard]	700meter [yard]/minute		730g [26oz.]	Electronic Counter
CT1-3:100A			0.01m [yard]	250meter [yard]/minute		740g [26oz.]	
CT1-3:1000A			0.001m [yard]	100meter [yard]/minute		790g [28oz.]	
CT1-3:1R	Photoelectric Sensor, 2 Non-contact Outputs (Voltage Output / 90°Quadrature Output)	1m [yard]	700meter [yard]/minute	740g [26oz.]	Bidirectional Electronic Counter		
CT1-3:10R		0.1m [yard]	500meter [yard]/minute	740g [26oz.]			
CT1-3:100R		0.01m [yard]	250meter [yard]/minute	750g [26oz.]			
CT1-3:1000R		0.001m [yard]	100meter [yard]/minute	780g [28oz.]			
CS-3:1	Reed Switch	1m [yard]	500meter [yard]/minute	740g [26oz.]	0.015N m [2.12ozf-in]	Electronic Counter Electromagnetic Counter	

\* Factory-installed option. : Open collector output is available in 1 and 2 non-contact outputs models. "C" should be added to the model number. (Ex.) CT1-3:10AC

## 2. Specifications

Model	Output	Power source	Current consumption	Output impedance	Maximum load current
CT1-3:1, CT1-3:10	1 Output	Microswitch Contact output, Capacity : 250VAC · 5A , 125VDC 0.5A (Load)			
CT1-3:1A, CT1-3:10A, CT1-3:100A	1 Output	5-24VDC±10%	35mA	3.9KΩ	100mA
CT1-3:1000A	1 Output	5-12VDC±10%	20mA	2KΩ	20mA
CT1-3:1R, CT1-3:10R, CT1-3:100R	2 Outputs (90°Quadrature)	5-24VDC±10%	70mA	3.9KΩ	100mA
CT1-3:1000R	2 Outputs (90°Quadrature)	5-12VDC±10%	40mA	2KΩ	20mA
Ambient temp. : Operating	-10 - +50°C [14 - 122°F] (Should not be Frozen)		Ambient Humid. : Operating	35 - 85% (Non-Condensing)	
Installation environment	Over-voltage category II, Pollution degree 2, Indoor use (IEC61010-1)		Altitude	2000m max. Compliance CE, RoHS	
CS-3:1	1 Output	Reed Switch Contact output, Capacity : 300VAC 0.7A 70VA, 350VDC 0.5A 50W (Load)			
Ambient temp. : Operating	-5 - +40°C [23 - 104°F] (Should not be Frozen)		Ambient Humid. : Operating	85% max. (Non-Condensing)	

## 3. Accessories

Model : CT1	Measuring wheel for meter x 2	2 pieces of measuring wheel for meter are equipped as standard accessories. Instead of those, 2 pieces of measuring wheel for yard are available. Please order type of measuring wheel. "-YP" should be added to the model number. (Ex.) CT1-3:10A-YP
Model : CT1-A	Measuring wheel for meter x 2, 3P connector x 1	
Model : CT1-R	Measuring wheel for meter x 2, 4P connector x 1	
Model : CS	Measuring wheel for meter x 2	

Measuring wheel for meter : Diameter 106.1mm (Circumference 1/3 meter), Surface material is Thermoplastic Rubber.  
Measuring wheel for yard : Diameter 97.0mm (Circumference 1/3 yard), Surface material is Thermoplastic Rubber.

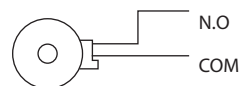
## 4. Connection

\*3P/4P connector (Please wire the cables to the terminal pins inside the plug after removing the cover.)

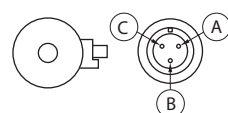
Model : CT1  
(Micro Switch output)



Model : CS  
(Reed Switch output)

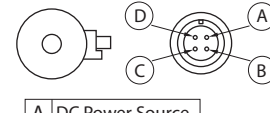


Model : CT1-A  
(Photoelectric sensor 1 output)  
3P connector

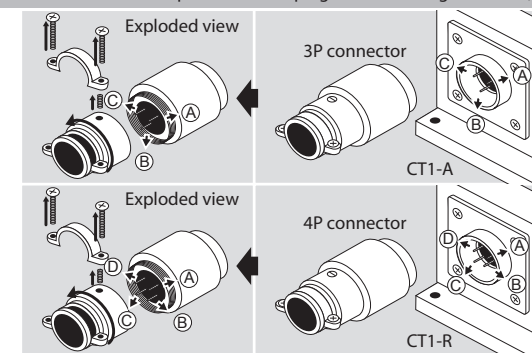


A	Output
B	GND
C	DC Power Source

Model : CT1-R  
(Photoelectric sensor 2 outputs)  
4P connector



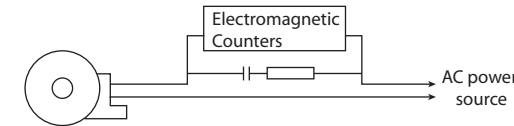
A	DC Power Source
B	Output A
C	GND
D	Output B



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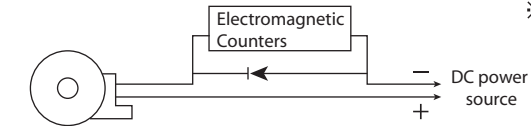
## 5. Connection to counters

Model : CT1 · CS



Model : CT1-A (3P connector)

Terminal numbers in generator's connector	Terminal numbers in counter			
	MD	G48 E48	E60	E10
A Output	4	1	1	1
B GND	3	4	4	4
C DC power source	2	3	3	3



Model : CT1-R (4P connector)

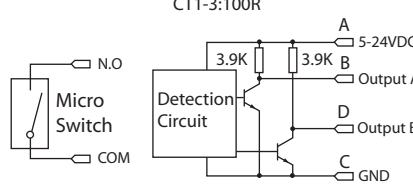
Terminal numbers in generator's connector	Terminal numbers in counter			
	MDR	G48 E48	E60	E10
A DC power source	3	3	3	3
B Output A	4	1	1	1
C GND	6	4	4	4
D Output B	5	2	2	2

It is recommendable to use such components as diode, CR etc., for the protection of contact in the case of connection with such inductive load as electromagnetic counter.

## 6. Output circuit

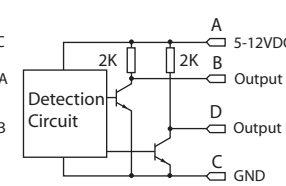
Model : CT1

CT1-3:1  
CT1-3:10



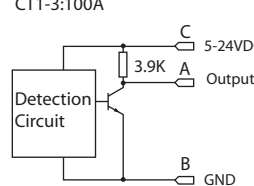
Model : CT1-R

CT1-3:1R  
CT1-3:10R  
CT1-3:100R

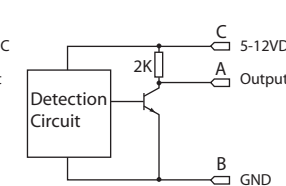


Model : CT1-A

CT1-3:1A  
CT1-3:10A  
CT1-3:100A

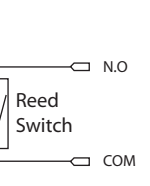


CT1-3:1000A



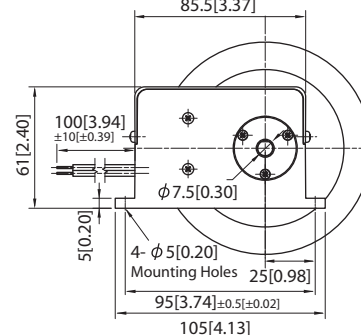
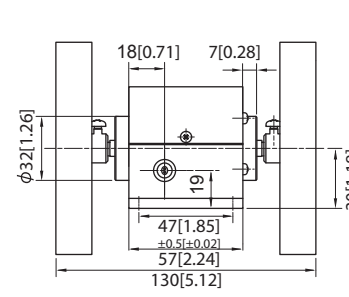
Model : CS

CS-3:1

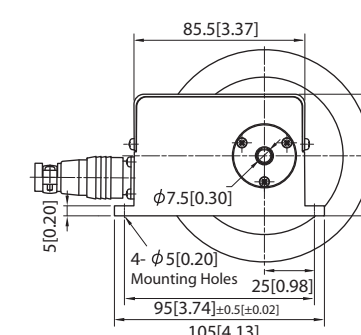
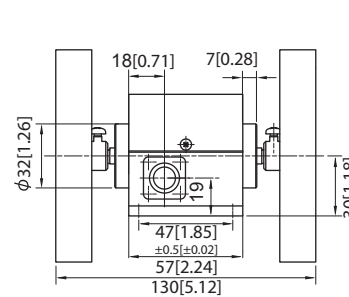


## 7. Dimensions : mm [inch]

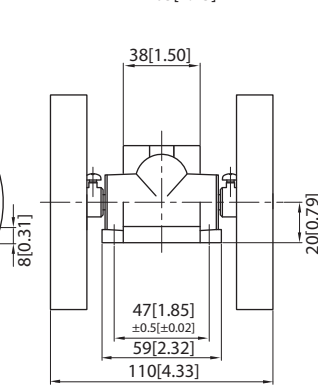
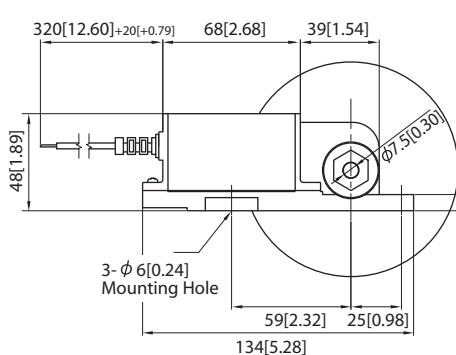
Model : CT1



Model : CT1-A / CT1-R



Model : CS



## Installation note

- Make sure that measuring wheels are fixed to the shaft of the device with the screws provided to avoid slippage.
- Make sure that both measuring wheels are parallel to each other and perpendicular to the surface of measuring object or roller.
- Be careful to the surrounding environment if the measuring object is easy to be stretched by tension, temperature and humidity.
- Please avoid using this device at places with vibrations that may cause not only imprecise measurement, but also malfunction of the device.
- There may be differences between measured value on the counter and actual length of the material. If this happens, kindly check if the measuring wheels slip or if the roller is synced with the measuring object.
- ON and OFF ratio of output of standard device is 1:1. For example, 0.5m-ON and 0.5m-OFF are for the measuring unit of a meter.
- There may be some differences between measured value on the counter and actual length of the material. The differences may be made when ON/OFF of output signal happens shortly before or after the measuring "start position" or measuring "stop position". It is recommended that you consider the resolution of the device based on the required accuracy.

	Wheel		Meter Wheel	Yard Wheel
	Meter Wheel	Yard Wheel		
UNIT OF MEASURE	Meters	Yards		
MODEL	MRM096	MRM097		
TYPE OF SURFACE	Plain			
MATERIAL OF SURFACE	Thermoplastic Elastomer			

- Measuring wheels are subject to slip due to wear after prolonged usage. They may cause measurement errors if not replaced on time. Please periodically check the wheels for signs of deterioration.