



ONOSOKKI

RP-7400 Series

ROLLER ENCODER

INSTRUCTION MANUAL

ONO SOKKI CO., LTD.

Warranty

1. This product is covered by a warranty for a period of one year from the date of purchase.
 2. This warranty covers free-of-charge repair for defects judged to be the responsibility of the manufacturer, i.e., defects occurred while the product is used under normal operating conditions according to descriptions in this manual and notices on the unit label.
 3. For free-of-charge repair, contact either your sales representative or our sales office nearby.
 4. The following failures will be handled on a fee basis even during the warranty period.
 - (a) Failures occurring through misuse, mis-operation, or modification
 - (b) Failures occurring through mishandling (dropping) or transportation
 - (c) Failures occurring through natural calamities (fires, earthquakes, flooding, and lightning), environmental disruption, or abnormal voltage.
- * For repairs after the warranty period expired, contact your sales representative or our sales office nearby.

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2. The contents of this document are subject to change without notice.
3. This document has been produced based on a series of strict verifications and inspections. Should a failure occur nonetheless, please inform our sales representative or sales office.
4. Ono Sokki shall have no liability for any effect resulting from any operation, whether or not the effect is attributable to a defect in the documentation.

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Introduction

This instruction manual is intended for the users of the RP-7400 Series Roller Encoder. This manual describes the name and functions of each section of the product and its basic operational procedure.

Please read this manual thoroughly before using your RP-7400 Series Roller Encoder.

This manual contains some precautions which, if ignored, could cause property damage. Be sure to follow the operational procedure described in this manual.

Please keep this manual in a safe place after reading for future reference.



- Your RP-7400 Series Roller Encoder has been subjected to strict inspections before shipment in order to verify that it operates normally.
- After the product is delivered, first make sure that it has not been damaged during transportation and check each operation with reference to this manual.
- If the product is damaged or does not operate normally as described in this manual, stop usage immediately, and contact the nearest Ono Sokki sales office or the distributor where you purchased the product.



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- No part of the contents of this document may be reprinted or reproduced without authorization.
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- All corporate names and product names used herein are either trade names or registered trade names of their respective holders.

Precautions

● Precautions for exporting, or taking our products (including services) abroad

If applicable, laws relevant to export restrictions such as International Exchange and Foreign Trade Law etc., requires that an export certificate issued by the Ministry of Economy, Trade and Industry is required when exporting, or taking our products (including services) abroad.

For products that do not apply, there are cases where non-applicable written findings are required for customs clearance. Consult your local business office or our legal affairs department (TEL: +81-45-476-9707) when exporting or taking our products (including services) abroad.

● Repair Service

If the product malfunctions, stop using the product immediately, and contact the nearest Ono Sokki sales office or the distributor where you purchased the product. Note when contacting, please inform us with the product name and the type name of the equipment, along with the purchase date.

● Warranty Terms

The below warranty terms shall not restrict the customers legal rights.

For any queries about repairs after the warranty period, contact the nearest Ono Sokki sales office or the distributor where you purchased the product. If proper functioning of the product can be maintained by repairs, paid repairs can be performed upon customers request.

"Warranty" herein is defined as warranty for the product alone, thus damage set off by the product's defect is not covered. Please be advised.

1. The products warranty period is one year from the date of purchase.
2. Repairs will be performed free of charge only within the warranty period, under the circumstance that the product malfunctioned in usage complying to the warnings on the instruction manual and the labels attached to the main unit.
3. If the product malfunctioned during the warranty period, and you choose to have the product repaired free of charge, contact the nearest Ono Sokki sales office or the distributor where you purchased the product.
4. Repairs during the warranty period will not be performed free of charge under the following conditions:
 - A) Malfunction or damage due to improper use and wrongful repairs or modifications
 - B) Malfunction or damage due to shocks caused by drops or contacts
 - C) Malfunction or damage due to act of Providence such as fire, earthquakes, lightning, and public disruptions or abnormal voltage
 - D) Suppliance of consumables, spare parts, accessories
5. Actual cost for the trip will be requested for repairs that require trips to isolated islands or remote locations.
6. This warranty is valid only in Japan.

For Your Safety

To ensure safe and proper use of the RP-7400 series roller encoder, be sure to understand warnings and precautions described in this manual and this chapter before using the product.

When operating the RP-7400 series roller encoder, follow the directions described in this manual and this chapter.



Ono Sokki, Ltd. bears no responsibility for any warranty regarding damages, failures or injuries resulting from failure to follow instructions on warnings and cautions given in this manual and this section.

■ Safety Indications







This manual describes possible danger or risks of the product or those you may encounter if relevant direction is ignored, and measures for avoiding such danger or risk.

A warning label is stuck on or near portions of the product with possible danger or risk.

In this manual two different terms WARNING and CAUTION are used depending on the degree of danger or risk possible. Each term has the following meaning.

 WARNING	<ul style="list-style-type: none"> • Failure to follow the instruction can lead to death or serious injury.
 CAUTION	<ul style="list-style-type: none"> • Failure to follow the instruction can lead to burn or other injury or property damage.

Precautions and notices for danger are given by three different symbols: Attention, Prohibition, and Mandatory. Each symbol has the following meaning.

Symbol	Definition	Meaning	Example
	Attention	Indicates that failure to follow the instruction could lead to a risk of danger. The drawing in the symbol indicates the type of danger involved.	
	Prohibition	Indicates actions that must not be taken. The drawing in or near the symbol indicates the action that is prohibited.	
	Mandatory	Indicates an action that is mandatory. The drawing in the symbol indicates the action that you must do to avoid the danger.	

For safe and proper use of the RP-7400 series roller encoder, be sure to understand warnings and precautions described in this section before using the product.

For the details of each symbol, refer to the "Safety Indications" on page 3.

■ Precautions for Measurement



Always stop the device subject to measurement when installing or wiring the roller encoder.

When the roller is rotating on the device during measurement, avoid approaching them.

- There is a high risk that you could be rolled in by part of your body or clothes.

Do not use the product in a place where there is gas or steam.

- Using the product where steam or combustible or explosive gas is present may result in an explosion. Never operate the product under such conditions.



Do not disassemble the roller encoder.

- Foreign object, dust or liquid may intrude and cause a failure.



Be careful not to spill any solvents on the roller of the roller encoder.

- Since the roller is made of polyurethane rubber (ether), there is a risk of being dissolved or causing flakes.

■ Precautions on Installation, Removal, Storage and Connection



Do not install the roller encoder in locations with significant vibration or shock.

- This may result in damage to internal parts or failures. Also, it could cause the product to drop off or fall down, leading to injuries or damage to the roller encoder.

Do not install the roller encoder in locations where the product may be exposed to water, steam, oil or lots of dust.

- Water, oil or dust may intrude and cause a failure.



Do not install the roller encoder in outdoor places or where the product may be subject to high temperature, rapid temperature changes or direct sunlight.

- This may cause condensation or damage to internal parts, resulting in failures.



When connecting cables to the roller encoder, always make sure that power is not being supplied.

- Connecting cables while power being supplied may cause an electric shock or damage to the roller encoder.

Confirm the connector numbers before connecting or wiring to the connector on the roller encoder.

- In particular, if connected to wrong numbers or if polarity is reversed, it may cause an electric shock or damage to internal parts, resulting in failures.
-

■ Precautions on Operation



CAUTION



Always use power supply within the specified value for the roller encoder.

- Connecting power supplies or voltages which exceeds the specified value, or reversing the polarities will result in an electric shock or damage to the roller encoder.



Do not slacken the cables connecting to the roller encoder more than necessary. Wire the roller encoder from the nearest point.

- If you get caught in the cable or in the rotating machinery, it may cause injuries or the product failure.
-

List of Conforming Standards

The RP-7400 Series Roller Encoder is designed and inspected under the following standards.

■ EMC Directive (2004/108/EC)



This item is valid only in the EU.

This product complies with the EMC Directives (2004/108/EC) CE marking requirements.

Electromagnetic waves generated from the RP-7400 Series Roller Encoder complies with the standards for the interference levels of radio / communication device in standard homes (Class B).

■ EMC Standards (EN61326-1: 2006 Class B Industrial Environment)



This item is valid only in the EU.

This product complies with the EMC Standards (EN61326-1: 2006 Class B Industrial Environment) CE marking requirements.

■ FCC (Federal Communications Commission) Part15B Class B

This item is valid only in North America.



This product complies with the requirements for the regulations of EMI (Emission) of Class B device of FCC (Federal Communications Commission) Part 15 B unauthorized high frequency device B (receiver - IT device) .

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The test results certifies that this device complies with the restriction of the FCC regulation Part 15 for Class B Digital Devices.

These restrictions are intended to provide appropriate protection from harmful radio wave interference when used in residential districts.

This device generates, uses, and may emit radio wave, thus it may interfere with radio communications if not installed or used as directed in the instruction manual. However, it is not guaranteed that radio wave interference will not occur under certain install conditions.

If this device is interfering with radio or TV, which can be determined by turning the equipment off and on, we recommend to correct the issue by trying the following methods: 1) Alter the direction or location of the receiving antenna, 2) put distance between the device and the receiver, 3) connect device to a circuit different from the circuit connecting the receiver, 4) consult a dealer, or an experienced radio / TV technician.

If device is altered or modified without the explicit approval by the responsible party relevant to the compliance, the user may lose the right to operate the device. If any specified additional parts, or a shield interface cable is provided with the product installation accessories, they must be used in order to comply with the FCC regulations.

■ Canadian Communication Bureau

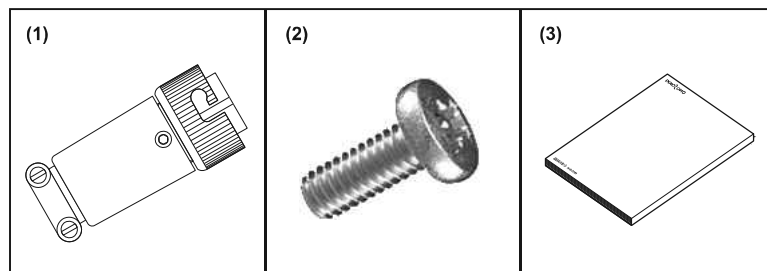
DOC Class B Compliance - This Class B digital apparatus complies with Canadian ICES-003.

Observation des normes-Classe B - Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

List of Supplied Items

After unpacking, confirm that the following accessories are included in the package.

If any of the items is missing or damaged, immediately contact the nearest Ono Sokki sales office or the distributor where you purchased the product.



	Name	Content	Quantity
(1)	Connector	RM12BPE-5S(71)	1
(2)	Bind small screw	M4 length 8	1
(3)	Instruction manual	This manual	1

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1. Introduction of the Roller Encoder

1.1 Introduction of the RP-7400 Series

The RP-7400 Series Roller Encoder is an equipment designed to measure the length or line speed by bringing the object flowing in the line in contact with the roller, and detecting the roller's rotation.

The roller's outer circumference is 200 mm. The line speed is measured by counting the output pulse signal of the detector with the one second gate frequency counter.

Measurements can be performed with either 0.1 m/min unit for 120 P/R type, 0.01 m/min unit for 1200 P/R type, depending on the output pulse value.

Additionally, measurements in increments of 1 mm length can be performed by counting the 200 P/R type output pulse signals with the cumulative counter.

Note that circumference error caused by roller abrasion can be corrected by the correction features integrated in the multi-function Reversible Counter RV-3150, when connected with our multi-function Reversible Counter RV-3150.

1.2 Type Structure of the Roller Encoder

■ Standard and Option Type Structures

Type name of the RP-7400 Series Roller Encoder is expressed as follows by the output method.

RP-7400-□P/R

(1) Output pulse value

Furthermore, when the optional output method is selected, the option type is added as follows.

RP-7400-□P/R, □

(2) Output mode

Item		Code	
(1)	Output pulse value	Designate output pulse value from 120, 200, 1200	
(2)	Output mode	RP-0701	Emitter
		RP-0702	Collector
		RP-0703	Open collector
		None (standard)	Totem pole

■ Examples of Roller Encoder Type Setups

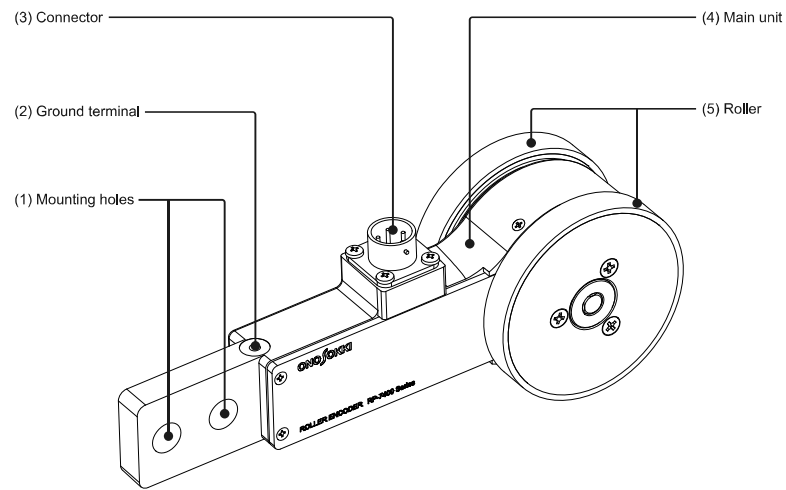
For example, open collector with 1200 P/R is expressed as follows.

RP-7400-1200 P/R, RP-0703

(2) Output method: RP-0703 open collector

(1) Output Pulse Value: 1200

2. Component Names and Functions



(1) Mounting hole

This is a hole for mounting RP-7400 Series Roller Encoder.

Always use this mounting hole when mounting the RP-7400 Series Roller Encoder.

Mounting hole size	$\phi 10H7$ (2 places)
--------------------	------------------------

(2) Ground terminal

This is a terminal used for grounding the RP-7400 Series Roller Encoder's main unit.
Please ground the main unit when using your RP-7400 Series Roller Encoder.

Ground terminal screw size	M4 depth 8
----------------------------	------------

(3) Connector

This connector supplies power to the RP-7400 Series Roller Encoder.
Furthermore, it outputs measurement signals measured by the RP-7400 Series Roller Encoder.

Connector type number	RM12BRB-5PH (Hirose Electric Co., Ltd.)
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(4) Main unit

This is the main unit of RP-7400 Series Roller Encoder.
The roller is held, and each components are attached to the main unit.

(5) Roller

This is a component which contacts the RP-7400 Series Roller Encoder and the measurement object.
The measurement object's movement is detected by the roller's rotation.

Roller material	Polyurethane rubber
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3. Mounting the Roller Encoder

In order to use the RP-7400 Series Roller Encoder properly, mount according to the following instruction.

Furthermore, the RP-7400 Series Roller Encoder complies to the EMC requirements of the CE Marking. Mount the RP-7400 Series Roller Encoder according to the instructions herein complying to the EMC.

3.1 Precautions for Mounting Location

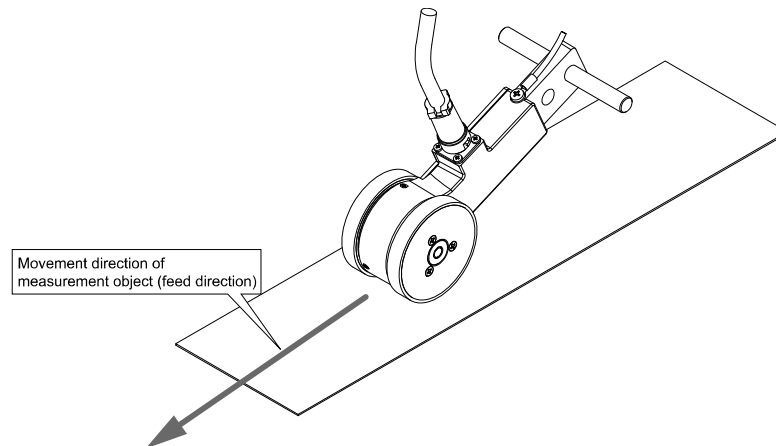
Confirm the following precautions for mounting locations before mounting.

- Locations free of explosives, harmful gases (sulfide gas, etc.) and liquids
- Locations without direct sun light
- Locations free of dust and iron powder
- Locations free of salt
- Locations with low electromagnetic noise (welding machine or powered equipment)
- Locations free of radioactive substance and magnetic field, and non-vacuum locations
- Locations with 0 to +50°C environmental temperature, and free of rapid temperature changes
- Locations where environmental humidity is within 35 to 93% RH
- Locations below 2000 m above sea level

3.2 Mounting the RP-7400 Series Roller Encoder

Mount the RP-7400 Series Roller Encoder according to the following figure.

Reconfirm the following precautions ("Precautions for Mounting the RP-7400 Series Roller Encoder" on page 15) before mounting the RP-7400 Series Roller Encoder.

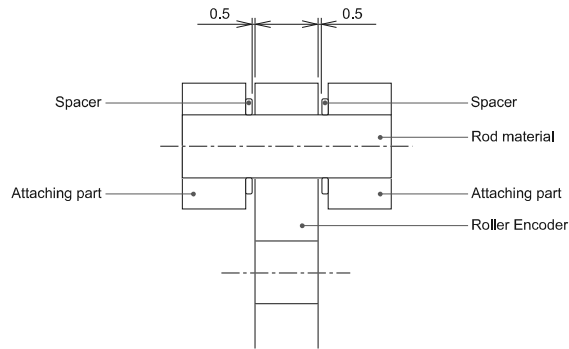


■ Precautions for Mounting the RP-7400 Series Roller Encoder

Always conform to the following precautions when mounting the RP-7400 Series Roller Encoder.

- Always stop the object being measured when mounting the RP-7400 Series Roller Encoder.
- Confirm the locations of the mounting holes ("2. Component Names and Functions" on page 12) before mounting the RP-7400 Series Roller Encoder.
- Do not place the RP-7400 Series Roller Encoder between other objects.
This will cause the functions to deteriorate or malfunction, or shorten the sensors service life.
- Use the mounting holes when mounting the RP-7400 Series Roller Encoder.
Do not use parts other than the mounting holes to mount. This will cause failures or malfunctions.
- Insert an 10 mm diameter and h7 margin rod made of SUS303 material in the RP-7400 Series Roller Encoder mounting holes according to the following figure.
Do not mount the main unit by putting between other objects. This will cause the functions to deteriorate or malfunction, or shorten the sensors service life.

Mounting the Roller Encoder



- Lift the main unit and confirm that the main unit moves with the mounting holes centered, after mounting the RP-7400 Series Roller Encoder.

If the main unit does not move smoothly, the size and the curvature of the rod is not appropriate. If there is a backlash, the rod is too thin.

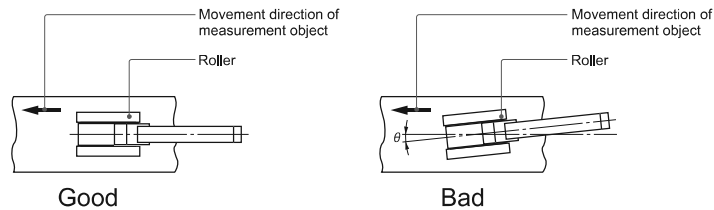
If the rod doesn't move smoothly, the roller can not follow the measurement objects movement, and the measurement can not be performed appropriately.

- Do not apply radial 20 N or more force to the roller section of the RP-7400 Series Roller Encoder.

This will cause disorder of the sensor accuracy, and destruction of internal mechanism. Additionally, this will apply load to the bearing, and cause failures.

- Always keep RP-7400 Series Roller Encoder's roller rotation direction, and the measurement object's movement direction parallel.

Measurement errors will arise if the movement direction is not parallel. Additionally, this will also apply load to the bearing, and cause failures.



- Do not apply lateral force to the roller section of the RP-7400 Series Roller Encoder.

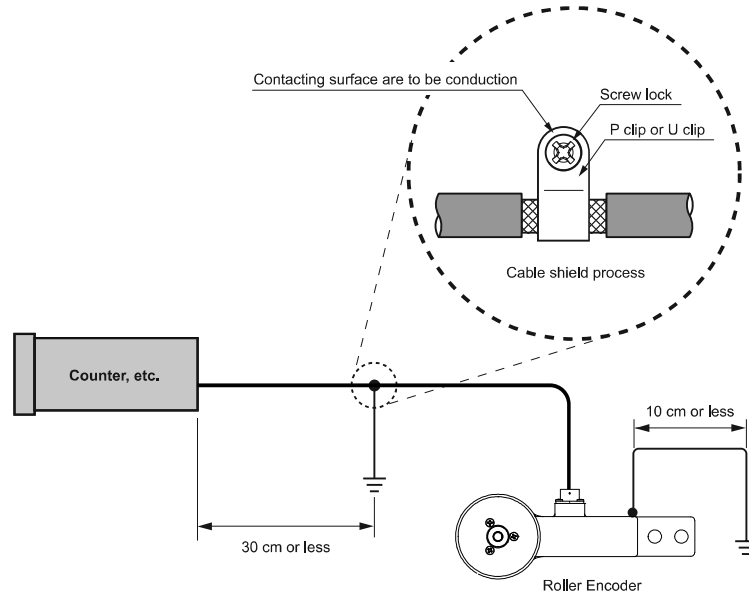
This will cause the functions to deteriorate or malfunction, or shorten the sensors service life.

- Manually rotate the roller, and confirm that there are no foreign objects, and the roller rotates smoothly, after mounting the RP-7400 Series Roller Encoder.

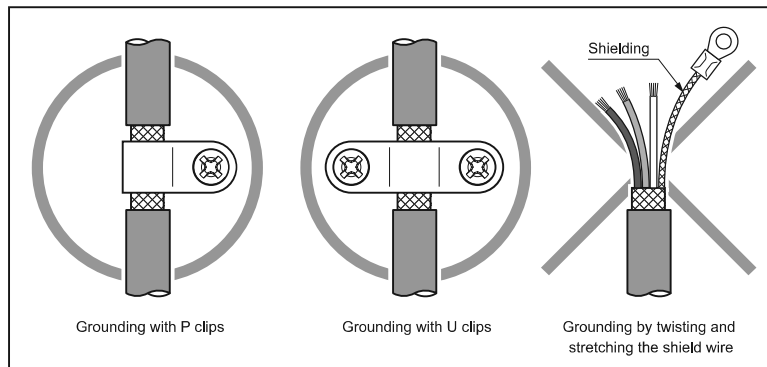
3.3 Precautions for Wiring the RP-7400 Series Roller Encoder

Always conform to the following precautions when wiring the RP-7400 Series Roller Encoder.

- Always stop the object being measured when wiring the RP-7400 Series Roller Encoder.
- Separate the wiring for the RP-7400 Series Roller Encoder from power supply line with high power load.
- Do not wire RP-7400 Series Roller Encoder parallel or in line with power lines.
- Use shielded cables for signal cables on the RP-7400 Series Roller Encoder.
- Keep signal cables for the RP-7400 Series Roller Encoder shorter than 10 m.
- Mount RP-7400 Series Roller Encoder away from equipments with strong electric fields and magnetic fields.
- Ground the main unit with the ground terminal (M4) on the RP-7400 Series Roller Encoder, in order to avoid malfunctions caused by noise interference.
Use the thickest cable available for ground cable, and use crimped terminals for the terminal.
- The RP-7400 Series Roller Encoder may take an electrical charge depending on the measurement object.
Always ground the main unit.
- Use metallic cable ground, metallic P clips or U clips for shielding wire, and ground as short as possible.
Place within 30 cm from the connectors of the counter, when using clips for grounding.
For details, refer to the following figure.



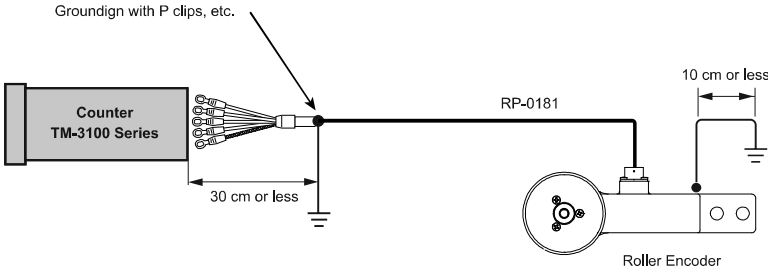
- Ground example: Avoid grounding by stretching the shield wire for an extended distance.



■ Wiring Example Using the Optional Cable

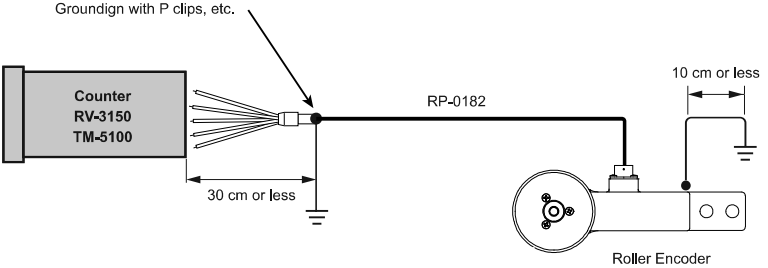
RP-0181 or RP-0182 is available as an optional cable.
 The wiring example for each of the optional cable is as follows.

● Optional cable RP-0181 (terminal: crimped terminal M3)



Signal Name	Color of wire	Pin No.
SIG A	Blue	1
SIG B	White	2
+12 V	Red	3
N.C.	N.C.	4
COM	Green, Black	5
Shield	Shield	Case

● Optional cable RP-0182 (terminal: open)



Signal Name	Color of wire	Pin No.
SIG A	Blue	1
SIG B	White	2
+12 V	Red	3
N.C.	N.C.	4
COM	Green, Black	5
Shield	Shield	Case

3.4 DC power supply and signal cable wiring

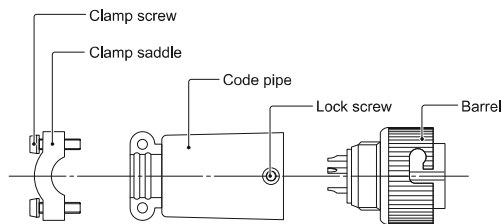
The following are instructions (Step 1 to 5) on assembling a cable using the provided connectors.

- Use cable with a $\phi 5$ to 8 mm outer diameter.
- Use cables with shielded wires for cables (AWG22 to 28).
Furthermore, use cables equivalent to our optional cables.
- Assemble so that the cable shield makes contact with the connector cover.
- Refer to "3.5 RP-7400 Series Roller Encoder Connector" on page 23 for signal pinouts.

■ Step 1: Disassemble Connector

Disassemble connector according to the following figure.

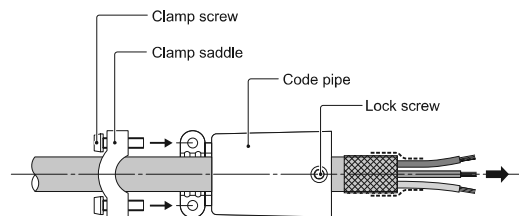
- (1) Loosen screw stopper.
- (2) Rotate barrel counter clockwise, and remove from code pipe.
- (3) Loosen clamp screw, and remove clamp saddle from the code pipe.



■ Step 2: Pass Disassembled Connector Parts Through the Cable

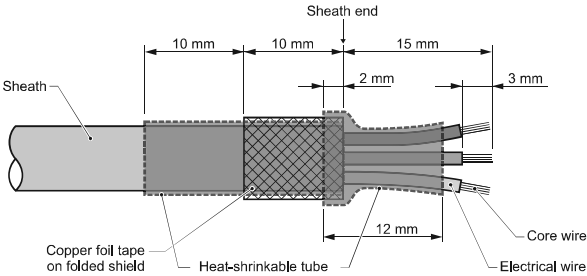
Refer to the following figure and pass each of the disassembled connector parts through the cable.

When passing through the cable, pay attention to the direction and order in which each of the parts are passed through.



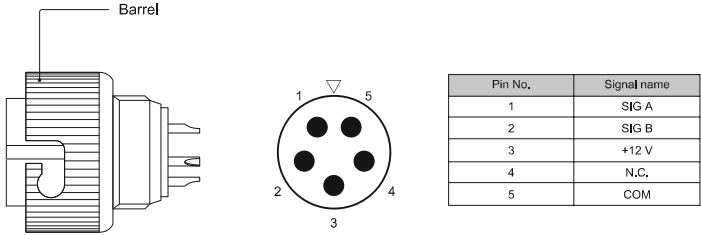
Step 3: Strip Cable Sheath and Electric Wire

Strip the sheath and electric wire of the wiring cable with the length provided in the following figure.
 Treat the shield by bending back, so that it will make contact with the connector cover. Cover heat-shrinkable tubing on half of the shield that was bent back.
 Pretin the core wire of the cable which was terminal processed.



Step 4: Solder

Refer to the following barrel pinout figure and solder each of the pins.



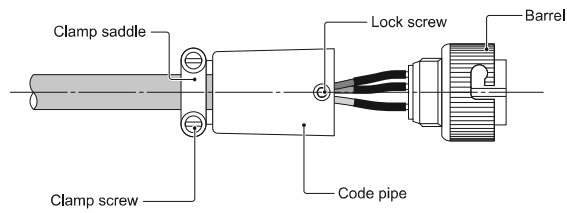
- (1) Pass heat-shrinkable tube through the core wire.
- (2) Insert pretinned core wire through the solder pot of the contact.
- (3) Heat up the contact and the core wire with solder iron.
- (4) Fill in the space in between the contact and the core wire by flowing solder.
- (5) Heat up the heat-shrinkable tube, and protect the solder pot and the core wire.

Solder Iron	Conductor cross section area (mm ²)	Iron tip temperature (°C)
10 W	0.3, 0.5, 0.75	280 to 300

■ **Step 5: Assemble Connector**

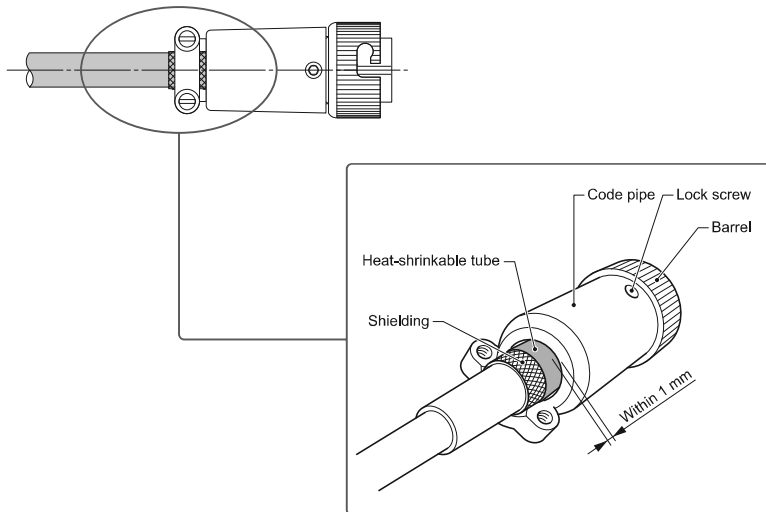
Refer to the following figure and assemble connector.

- (1) Attach barrel and code pipe by mounting the barrel, and rotating the code pipe.
- (2) Tighten the locking screws of code pipe to maximum 0.2 to 0.3 N·m.



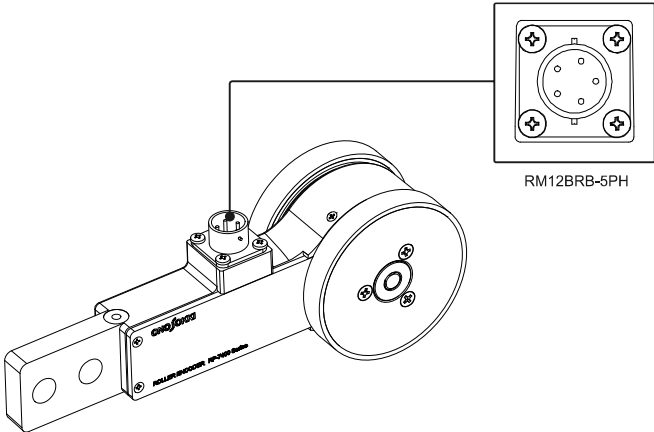
- (3) Tighten clamp screws to 0.4 to 0.6 N·m, and attach clamp saddle to code pipe.

When mounting shield section to clamp saddle, adjust the for / aft position and the diameter of the heat-shrinkable tube until the space between the code pipe is within 1 mm, as shown in the following figure.



3.5 Connector of RP-7400 Series Roller Encoder

RP-7400 Series Roller Encoder's connector supplies power and outputs signals.



- Precautions for Connection**
 Always use shielded cables for cables and ground the shield section.
 Refer to "3.3 Precautions for Wiring the RP-7400 Series Roller Encoder" on page 17 for details, and properly ground.

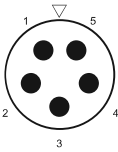
● **Connector**

Model	RM12BRB-5PH
Applicable connector	RM12BPE-5S(71)
Manufacturer	Hirose Electric Co., Ltd.

● **Pin assignment**

Pinouts are as shown on the following table.

Note that the pinouts are the same on all output methods.



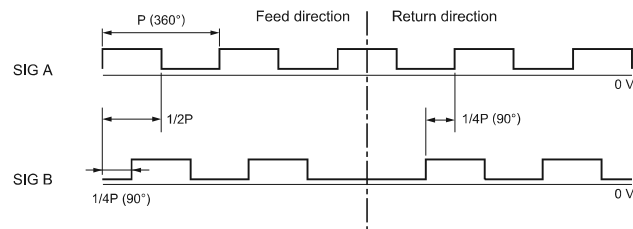
Pin No.	Signal name
1	SIG A
2	SIG B
3	+12 V
4	N.C.
5	COM

4. Output Signal

4.1 Output Signal of RP-7400 Series Roller Encoder

Two signals with 90 degrees phase difference is outputted by the rotation of the RP-7400 Series Roller Encoder's roller. The relation between the phase is reversed by the rotation direction.

Refer to "3.2 Mounting the RP-7400 Series Roller Encoder" on page 15 for the direction of feed and return.



4.2 Output Circuit

Totem pole output is the standard output method for the RP-7400 Series Roller Encoder.

It is possible to modify the output to emitter, collector, open collector as an option.

Output mode	Circuit configuration	Remarks
Totem pole (Standard)		<p>I_0: 20 mA</p> <p>Output resistance R_0 is a thermistor with a PTH positive temperature coefficient. This results as an 25°C and $6.8\ \Omega$ resistance value.</p>
Emitter (RP-0701)		Load resistance: 10 k Ω or more
Collector (RP-0702)		Load resistance: 10 k Ω or more
Open collector (RP-0703)		DC40 V, 50 mA or less

5. Measurement with the Roller Encoder

5.1 Measurement Precautions

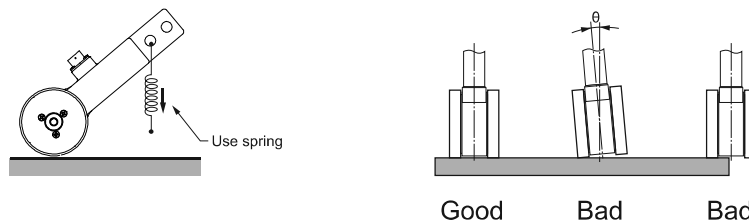
- Appropriate press force is required in between the RP-7400 Series Roller Encoder's roller and the measurement object. If appropriate press force is not present, slipping will occur, and cause measurement error.

Press force can be adjusted by mounting a spring to the RP-7400 Series Roller Encoder's mounting hole, as shown in the following figure.

In this case, the sum of spring force and empty weight of the RP-7400 Series Roller Encoder is the press force.

Note, adjust press force within RP-7400 Series Roller Encoder's allowed radial load.

- Adjust so that the RP-7400 Series Roller Encoder's roller and the measurement object is in contact with an equal amount.



- When stopping RP-7400 Series Roller Encoder's roller, do not apply brake by holding the roller between other objects.

This will cause disorder of the sensor accuracy, and destruction of internal mechanism.

- Do not rotate RP-7400 Series Roller Encoder's roller rapidly when stopped, or press rapidly against moving measurement object.

This will cause disorder of the sensor accuracy, and destruction of internal mechanism.

- RP-7400 Series Roller Encoder's roller makes contact with the measurement object. Therefore, the measurement object's temperature is transferred to the RP-7400 Series Roller Encoder by thermal conduction.

Ensure that the allowable operating temperature is not exceeded for both the measurement object and the RP-7400 Series Roller Encoder.

5.2 Measurement Procedure

■ Measurement Initiation Procedure

Following is the initiation procedure for the RP-7400 Series Roller Encoder.

- (1) Turn off power on peripherals to be connected.
Turn off power on peripherals such as counters or power supply units connected to the RP-7400 Series Roller Encoder.
- (2) Connect RP-7400 Series Roller Encoder and counter.
- (3) Put RP-7400 Series Roller Encoder's roller into contact with measurement object.
- (4) Turn on power on peripherals to be connected.
Turn on power on peripherals such as counters or power supply units connected to the RP-7400 Series Roller Encoder.
- (5) Move the measurement object.
Start the measurement with the measurement object stopped.
Then, slowly increase the speed to the set speed.

■ Measurement Stop Procedure

Finish the measurement safely by performing the following procedure after the measurement is finished.

- (1) Stop the measurement objects movement.
- (2) Turn off power on connected peripherals.
Turn off power on peripherals such as counters or power supply units connected to the RP-7400 Series Roller Encoder.
- (3) Separate RP-7400 Series Roller Encoder's roller from measurement object.
- (4) Detach RP-7400 Series Roller Encoder and counter.

6. Specifications

■ Electric Specifications

Output pulse value	Speed measurement	120, 1200 P/R
	Length measurement	200 P/R
Output waveform	2 phase square wave	
Duty ratio	50 ± 25%	
Phase difference	90 ± 45°	
Output voltage (For DC12 V supply)	Hi Level	10 V or more
	Lo Level	0.5 V or less
Output mode	Totem pole (load resistance 470 Ω or more) • Option: RP-0701 Emitter / RP-0702 Collector / RP-0703 Open Collector	
Supply voltage	DC12 V ± 5%	
Current consumption	100 mA or less (For DC12 V Supply)	

■ Machine Specifications

Speed range	0 to 600 m/min	
	• Above speed range varies depending on conditions of measurement object.	
Measurement unit	120 P/R	0.1 m/min
	1200 P/R	0.01 m/min
	200 P/R	1 mm
Roller material	Aluminum + urethane printing (A90 hardness)	
Roller circumference	200 mm	
Allowed bearing load	Radial 20 N	
Starting torque	1 mN·m	
Inertia moment	0.6 kg·cm ²	
Resistance to vibration	19.6 m/s ²	X/Y/Z each direction (150 minutes each), 10 to 150 Hz Sweep, 20 cycle
	196 m/s ²	X/Y/Z each ± both direction (6 ways) 3 times each (total 18 times) sine half wave, reaction time 11 ms

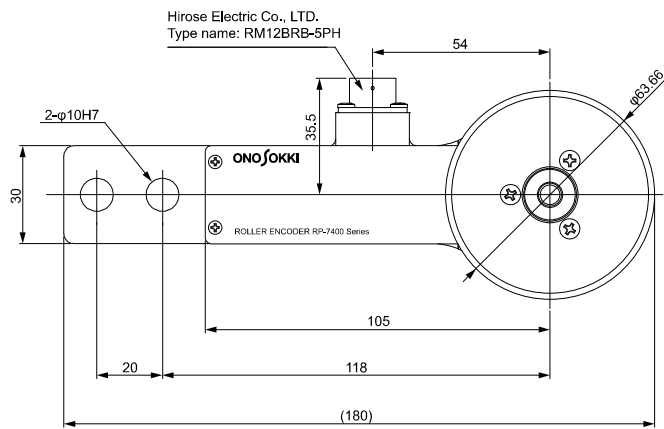
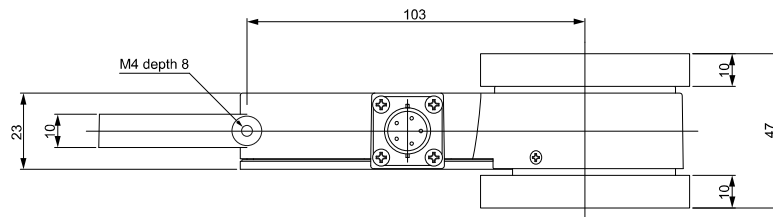
■ General Specifications

Operating temperature range	0 to 50°C, (however, no icing or condensation)	
Storage temperature range	-10 to 65°C, (however, no icing or condensation)	
Operating humidity range	Under 35 to 93% RH, (however, no icing or condensation)	
Mass	Approximately 400 g	
Protection Level	IP40 (when used with optional cable RP-0181, RP-0182)	
Accessories	Instruction manual (this document) × 1 Connector × 1	
Optional	RP-0181	Cable for RP-7400 Series Roller Encoder • 5 m long, crimped terminal (M3)
	RP-0182	Cable for RP-7400 Series Roller Encoder • 5 m long, terminal open



- Optional items are sold separately. Purchase separately at the nearest Ono Sokki sales office or the distributor where you purchased the product. Note for details or updates about optional items, refer to our website (<http://www.onosokki.co.jp>), or our current catalog.

7. External Dimensions



8. Troubleshooting

If in doubt of a failure, check the following items before requesting a repair.

If the product does not operate normally after performing the check, contact the nearest Ono Sokki sales office or the distributor where you purchased the product.

Symptom	Cause	Countermeasures and items to check
Poor roller movement	Foreign objects between the RP-7400 Series Roller Encoder's roller and the main unit	Remove foreign objects.
Measurement value is unstable	RP-7400 Series Roller Encoder's roller is not making proper contact with the measurement object	Refer to "3. Mounting the Roller Encoder" on page 14, and check the mounting.
	RP-7400 Series Roller Encoder's roller is not following the fluctuation of the measurement object's thickness	Refer to "5. Measurement with the Roller Encoder" on page 26, and press RP-7400 Series Roller Encoder against the measurement object.
	Interference caused by noise	Move output cable of the RP-7400 Series Roller Encoder away from noise generating equipments, such as motors, control devices, and power lines.
	Excessive vibration / shock / speed	Suppress vibration and shock transferred to the RP-7400 Series Roller Encoder. Additionally, use within the allowed speed range.
No signal output	Incorrect wiring	Refer to "4. Output Signal" on page 24, and properly wire.
	Wire is not connected	Connect wires appropriately.
	The power is not set to ON.	Check power supply. Additionally, check the connection.
	Incorrect receiving circuit	Four output methods (Standard / RP-0701 / RP-0702 / RP-0703) are available for the RP-7400 Series Roller Encoder. Always use the appropriate receiving circuit for the output method.

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*Outer appearance and specifications are subject to change without prior notice.
HOME PAGE: <http://www.onosokki.co.jp/English/english.htm>

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