



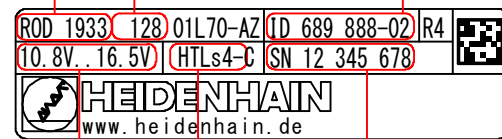
Mounting Instructions

A rotary encoder consists of high-precision components. Exercise sufficient caution when handling the encoder.

[1] General Instructions

- To prevent damage to the encoder, never drop or hit the encoder against a hard object, and never hang the encoder by its cable.
- Verify that you received your order. Identify the specification on the ID label of the encoder.

Model Output pulse (P/R) ID number



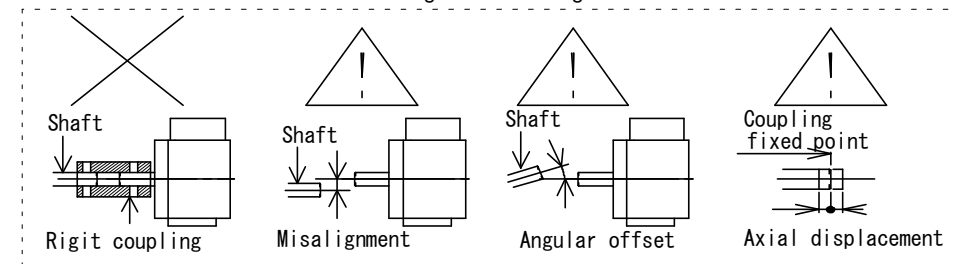
Supply voltage Output type Serial number

Model ROD19xx: Shaft type
Output HTL: Complementary (Differential) HTLs: Complementary (Single ended)

- Prepare the following items before use.
 - Power supply with 5 % maximum ripple (including noise)
Current requirement (NO load): ≤ 70 mA
Calculate proper power supply capacity based on the load to be used
 - Receiver corresponding to the output type of the encoder
- Additional processing (filing, processing of shaft diameter, etc.) of the shaft end must not be done, for there is a possibility of damaging inside.
- Pay attention to the following points when storing.
 - Encoder must be stored in a location free from condensation.
 - Do not put the encoder in a bag that produces a static electricity.
Encoder is stored in an antistatic bag when shipping.
 - Do not store the encoder near corrosive gas. Pay special attention to gases containing sulphur.

[2] Installation

- The encoder must be installed according to the following instructions.



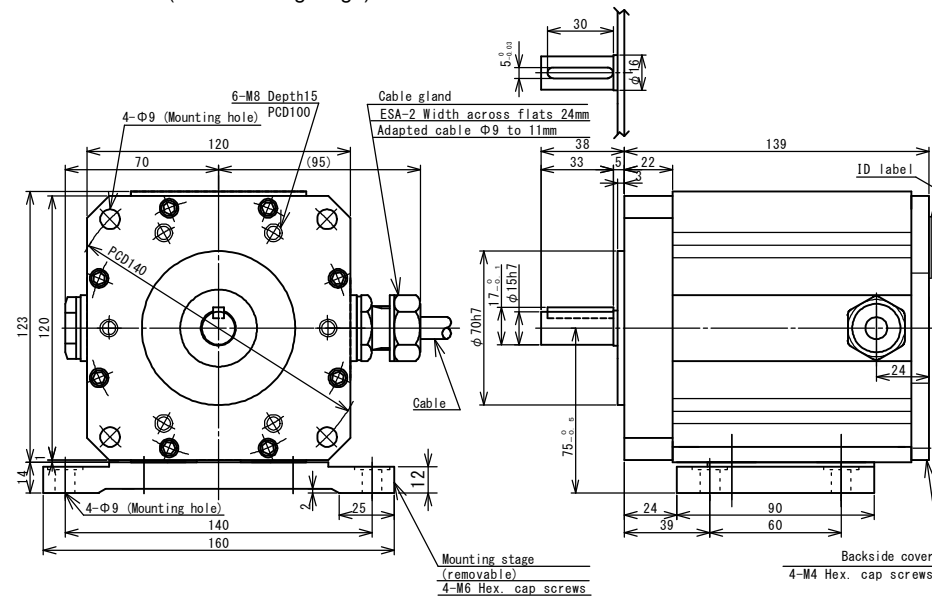
CAUTIONS

- The encoder must be securely fixed so that it will not be loosened due to machine vibration.
- Do not make the shaft connection with a rigid coupling.
- Do not hit pulley, gears or coupling when it is installed on the shaft. Excessive shock to the encoder could damage it.
- When the shaft of the encoder is connected to the machine shaft, the load imposed on the shaft must not exceed the allowable range. When a recommended coupling is used, proper shaft misalignment is within 0.15 mm (T.I.R.), within 1.5 ° for angular offset and ± 1 mm for axial displacement.
- The weight of the coupling is included in the shaft load. A proper coupling must be selected to avoid misalignment. Apply screw-locking adhesive to coupling screws to avoid loosening during operation.
- When the encoder shaft is connected with a pulley or gears, pay attention to the radial load produced when rotating resulting from gear eccentricity and mass eccentricity.
- When the encoder shaft is connected with a belt, make sure to use a timing belt. The rotation angle will not be accurately transmitted by using any belt other than a timing belt. Do not strain the belt excessively, and ensure that the belt is free from wear and loosening.
- Do not connect encoder with gear. Gear transmission needs backlash and it may affect the rotational displacement.
- Mounting and commissioning is to be conducted by a qualified specialist under compliance with local safety regulations. In addition to this, the machine manufacturer or designer himself must define the other data required for final assembly (e.g. anti-rotation lock for screws required or not) for the respective application.

ROD 1933

WELLA1: 09C
FLANA1: 88A
ANELA1: 01L70
BELEA1: AZ,BA,BB
FOKAA1: 63A,64A

- Dimensions (with mounting stage)



FOKKA1 64A:
The mounting adapter is removable from the encoder (fixed with four hexagon socket head bolts). Flange type installation is also available.
FOKKA1 63A:
No mounting adapter supplied.

- Possible coupling

Model	Shaft dia.	Key way width	Key way height
C-100-15K/15K 2-127001	$\phi 15H7$	5H7 5H7	17.3 $^{+0.1}$
C-101-18K/15K 2-127002	$\phi 18H7$	5H7 5H7	20.3 $^{+0.1}$
C-102-19K/15K 2-127003	$\phi 19H7$	6H7 5H7	21.8 $^{+0.1}$
C-103-20K/15K 2-127004	$\phi 20H7$	6H7 5H7	22.8 $^{+0.1}$
C-104-22K/15K 2-127005	$\phi 22H7$	6H7 5H7	24.8 $^{+0.1}$
C-105-25K/15K 2-127006	$\phi 25H7$	6H7 5H7	28.3 $^{+0.1}$

Since electrical corrosion due to current discharges through the encoder shaft can significantly reduce its lifetime, the use of an insulating coupling is highly recommended in case such shaft current is to be expected. Please contact us for specific details.

[3] Connections

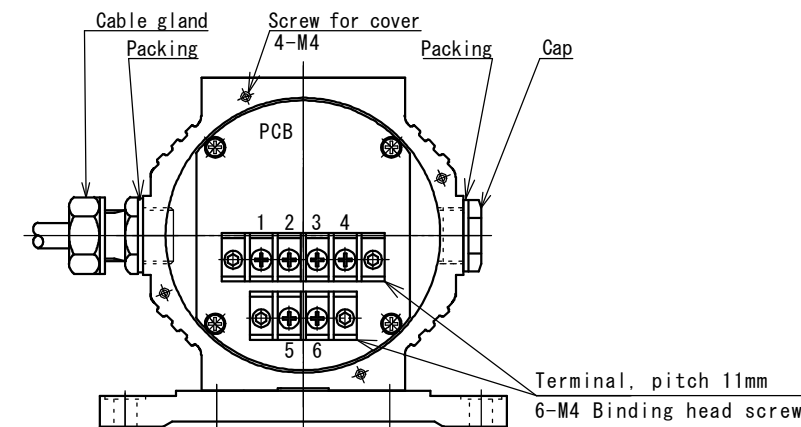
- Connections

Cable	SP-0095	Colour	Signal
Cable diameter	10.5 mm	White	Up (Vcc)
Wire cross-section	0.75 mm ²	Black	0 V
Sheath	PVC	Red	Ua1 (A)
		Yellow	Ua2 (B)
		Green	Ua0 (Z)
		Shield	\neq Body

- In some cases Ua2 (B) and Ua0 (Z) are not output. Please consult the specifications.
- SP-0095 cable is recommended for extension cable.

- How to change the cable

- The cable must be changed according to the following instructions.
- Remove the rear cover of the encoder. The cover is fixed by four Hexagon socket head bolts (M4).
 - Remove the cable from the terminal box.
 - Loosen the hexagon cap nut of the cable gland and pull the cable out.
Direction of cable output can be changed by removing the threaded cap.
 - Draw a new cable through the cable gland. After connecting the new cable to the terminal box, tighten the hexagon cap nut. (Torque for screw locking: 4.4 \pm 0.4 Nm)
 - Put the rear cover of the encoder back. (Torque for screw locking: 1.65 \pm 0.15 Nm (Adhesive recommended))



Terminal No.	BELEA1:AZ	BELEA1:BA	BELEA1:BB
1	White Up (Vcc)	White Up (Vcc)	White Up (Vcc)
2	Black 0 V	Black 0 V	Black 0 V
3	Red Ua1 (A)	Red Ua1 (A)	Red Ua1 (A)
4	Yellow Ua2 (B)	Yellow Ua2 (B)	—
5	Green Ua0 (Z)	—	—
6 (Body)	Not used	—	—

CAUTIONS

- Before touching the cable terminal directly by hand, remove the static electricity from your body.
- When a soldering iron or power tool is used, be sure to ground the tool.
- Do not bundle the cable with the line carrying electric noise and do not put them in the same pipe.
- Since the possible transmission distance and maximal signal frequency change depending on the output type, ensure that there are no errors in transmission.
- Check that the voltage to be supplied to the encoder is correct and do not reverse + (Up) and - (0V) of the power supply. Incorrect orientation could cause the encoder to fail. See ID label for rated range of power voltage. (see also chapter [1]-2.)
- Connection by terminal-strip or connector is recommended to avoid loosening.
- A metal box or metal connector must be used to cover the connection point so that it is not influenced by noise. Connecting should be done within a suitable protection structure when in an environment where condensation or dripping occurs.
- Since supply voltage is reduced when the cable is extended, an extension cable with large wire cross-section must be used.
- Always connect the shield all the way from the encoder to the receiver circuit and connect the shield properly to earth at the receiver circuit.
- For encoders with output type =...-C: Only connect the cable shield to earth once at the receiver circuit, avoid any additional connections to earth at extension or relay points.
- Unused output signal lines must be insulated. Do not allow the other signal lines, the power supply or frame ground to touch the unused output signal lines as such conditions could cause the encoder to fail.
- When the wiring is completed, check that the connection is correct. Incorrect connections could cause the machinery to go out of control.
- Do not engage or disengage any connections while under power.