

ifm electronic



Installation instructions

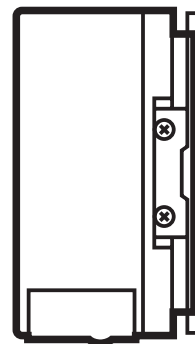
**efector 400<sup>®</sup>**

Incremental encoders

RP

UK

ID no. 349 401-03 704393/01 08/2010



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## Preliminary note

- An instruction is indicated by "►":  
Example: ► Disconnect power.

## 1 Safety instructions

- Please read the product description prior to set-up of the unit. Ensure that the product is suitable for your application without any restrictions.
- The unit conforms to the relevant regulations and EC directives.
- Improper or non-intended use may lead to malfunctions of the unit or to unwanted effects in your application.
- That is why installation, electrical connection, set-up, operation and maintenance of the unit must only be carried out by qualified personnel authorised by the machine operator.

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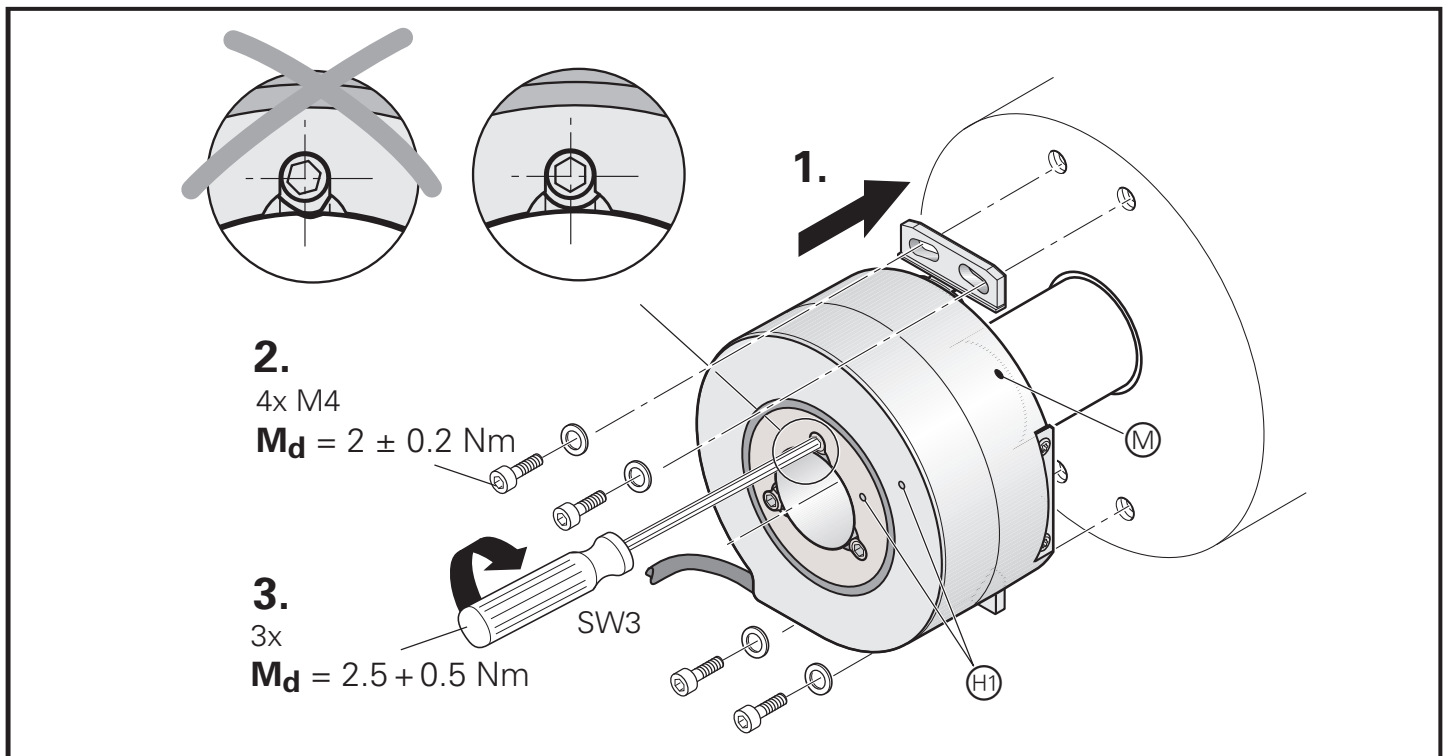
## 2 Functions and features

The encoder converts rotary movements into digital pulses. The evaluation of the pulses allows the determination of angular positions, lengths or rotational speeds.

- Supply voltage and resolution according to the type label
- Max. revolution mechanical
  - 20 mm hollow shaft: 6,000 rpm
  - 50 mm hollow shaft: 4,000 rpm

## 3 Installation

- ▶ Disconnect power. The drive must not be started during installation.
- ▶ The encoder shaft must not be hit; do not use a file or a similar tool on the shaft, it could destroy the unit.
- ▶ Slide the encoder over the shaft, min. 41 mm (20 mm hollow shaft); min. 56 mm (50 mm hollow shaft).
- ▶ Fix the stator coupling by means of 4 M4 screws  $M_d = 2 \text{ Nm} (\pm 0.2 \text{ Nm})$
- ▶ Tighten the clamping nut  $d = 2.5 \text{ Nm} (+ 0.5 \text{ Nm})$



H1: position of the reference mark  $\pm 15^\circ$

M: measurement point operating temperature

## 4 Electrical connection



The unit must be connected by a qualified electrician.

The national and international regulations for the installation of electrical equipment must be adhered to.

- ▶ Disconnect power.

### 4.1 Laying the cable

- Extension by means of a screened extension cable; max. length 100 m (TTL units RP1xxx), 300 m (HTL units RP6xxx).
- ▶ Lay separately from sources of interference (minimum spacing 0.2 m).
- ▶ Connect and ground the encoder housing, the connector/ terminal box and the evaluation electronics via the screen.
- ▶ Connect the unit according to the indications on the type label.

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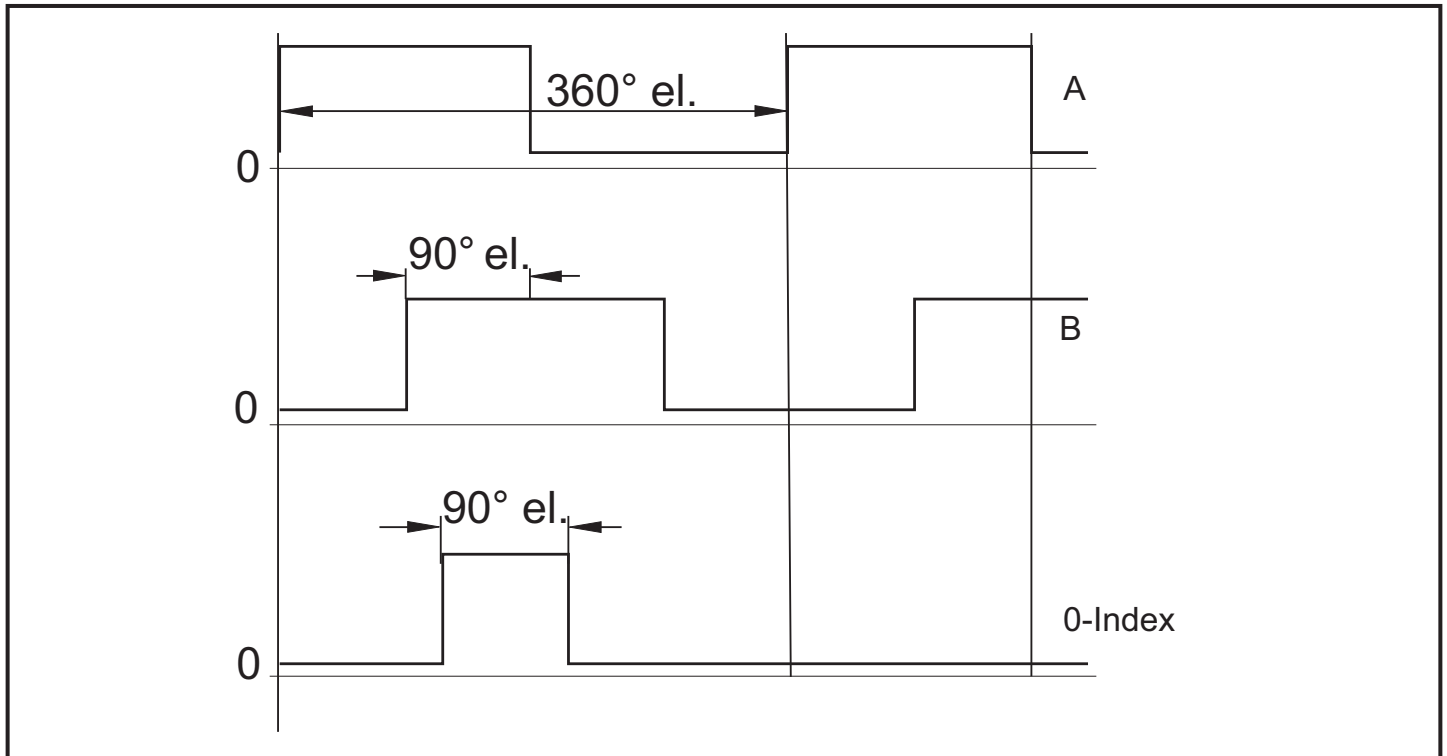
### 4.2 Connection of cable units

| Brown | Green    | Grey | Pink     | Red     | Black          |
|-------|----------|------|----------|---------|----------------|
| A     | A (inv.) | B    | B (inv.) | 0 index | 0 index (inv.) |

| Blue        | White        | Brown/<br>green | White/green | Lilac        | Screen  |
|-------------|--------------|-----------------|-------------|--------------|---------|
| Up (sensor) | 0 V (sensor) | Up              | 0 V (Un)    | error (inv.) | Housing |

## 5 Operation

### 5.1 Output signals



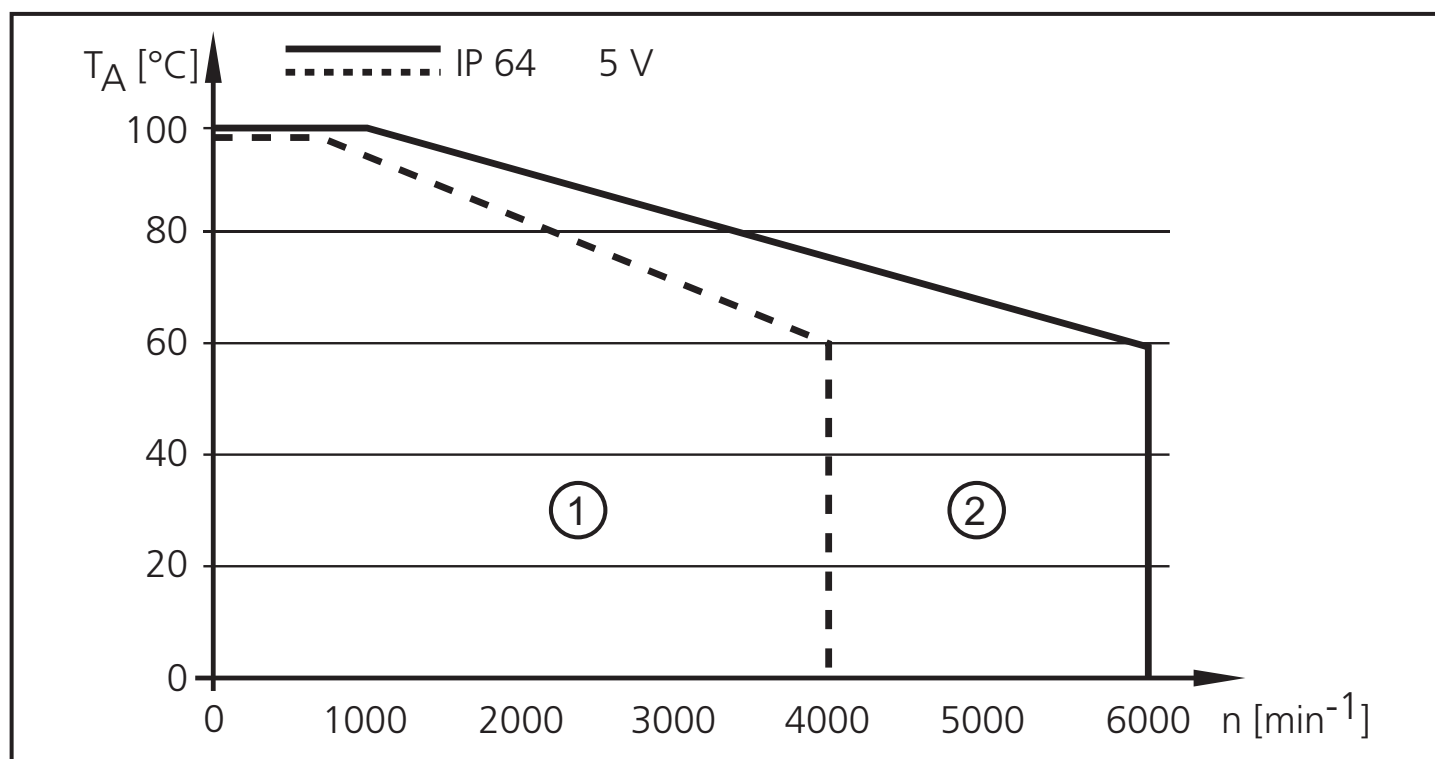
## 6 Technical data

- Supply voltage and resolution (pulses per revolution / "pulses") according to the type label
- Outputs (without  $U_{as}$ ) short-circuit protected against  $U_N$  (TTL units RP1xxx) and  $U_P$  (HTL units RP6xxx) < 1 minute
- Max. revolution mechanical
  - 20 mm hollow shaft: 6,000 rpm
  - 50 mm hollow shaft: 4,000 rpm



The direct relationship between the technical data "max. revolution mechanical, operating temperature, protection" must be considered (see the following diagram).

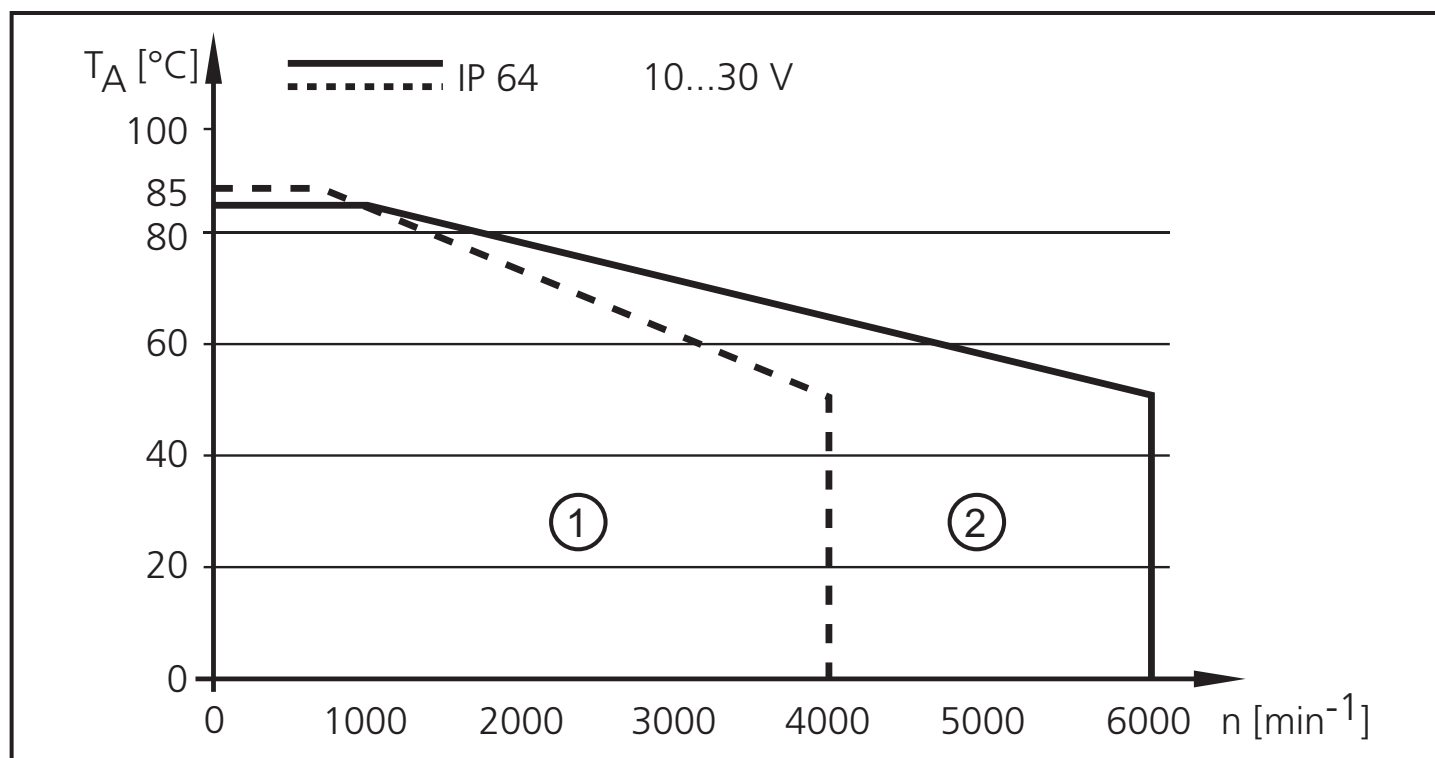
## Permissible operating temperature ( $T_A$ ), depending on rpm, RP1xxx



1: 50 mm hollow shaft

2: 20 mm hollow shaft

## Permissible operating temperature ( $T_A$ ), depending on rpm, RP6xxx



1: 50 mm hollow shaft

2: 20 mm hollow shaft

Example:

An encoder with 5 V operating voltage and a hollow shaft diameter of 20 mm is used. To guarantee the protection IP 64 for rpm of 6000 min<sup>-1</sup> the operating temperature of +60 °C must not be exceeded.

## **7 Maintenance, repair and disposal**

The operation of the unit is maintenance-free. It is not possible to repair the unit. After use dispose of the unit in an environmentally friendly way in accordance with the applicable national regulations.

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| Technical data and further information at<br><a href="http://www.ifm.com">www.ifm.com</a> → Select your country → Data sheet direct: |
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