

## 1. Product Overview

The steel belt grating is a precision measurement tool designed for linear and angular positioning applications in various industries. It combines robust construction with advanced optical technology for high precision and long-term reliability.

## 2. Key Features

- High measurement accuracy with excellent repeatability.
- Durable and resistant to harsh industrial environments.
- Supports integration with automation and control systems.
- Low-maintenance design for cost-effectiveness.

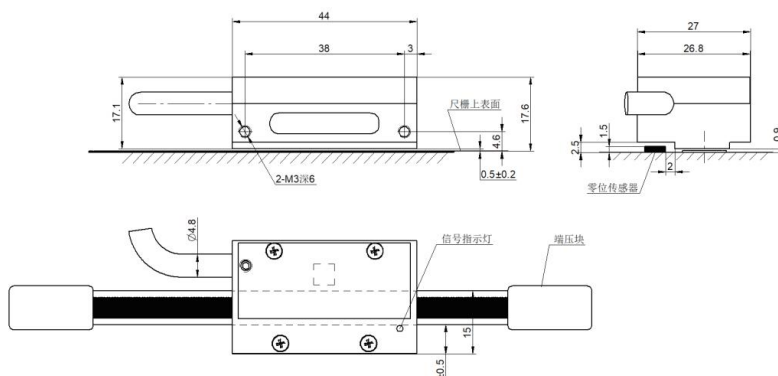
## 3. Technical Specifications

- **Material:** High-strength stainless steel.
- **Accuracy Grade:**  $\pm 3 \mu\text{m/m}$  or  $\pm 5 \mu\text{m/m}$  (depending on model).
- **Maximum Length:** Up to 50 meters (customizable based on requirements).
- **Width:** 10 mm to 20 mm (specific models may vary).
- **Resolution:** Compatible with high-precision optical sensors (up to  $0.01 \mu\text{m}$  depending on system configuration).
- **Operating Temperature Range:**  $-10^{\circ}\text{C}$  to  $50^{\circ}\text{C}$ .
- **Storage Temperature Range:**  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .
- **Thermal Expansion Coefficient:**  $10.5 \times 10^{-6} /^{\circ}\text{C}$ .
- **Clock frequency:** 20MHz

## 4. Dimension Drawing

The steel belt grating's dimensions are detailed in the technical drawing, which specifies the following:

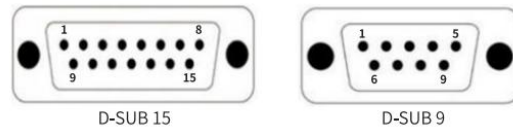
- **Grating Body:** Length varies based on model (up to 50 meters); width is between 10 mm and 20 mm.
- **Mounting Hole Positions:** Precisely aligned for secure and stable installation.
- **Thickness:** Typically 0.2 mm to 0.3 mm, depending on model.



## 5. D-SUB Connector Details

- **Pin Configuration:**

- Pin 1: Power Supply (+5V)
- Pin 2: Ground (GND)
- Pin 3: Signal A
- Pin 4: Signal B
- Pin 5: Index Pulse (Z Signal)
- Pin 6–9: Reserved for custom configurations.

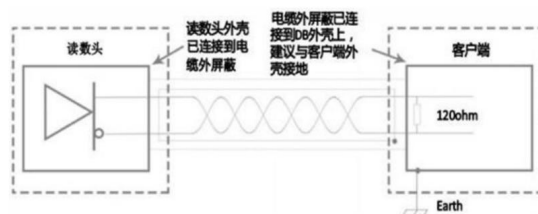


- **Connector Type:** 9-pin D-SUB, male or female depending on the system design.

## 6. Electrical Wiring Diagram

The electrical wiring diagram outlines the connections between the steel belt grating and the system controller:

- **Power Supply:** Connect the +5V and GND lines to a regulated power source.
- **Signal Lines:** Signal A, Signal B, and Index Pulse should be connected to the corresponding inputs on the control unit.
- **Shielding:** Ensure proper grounding of the cable shield to prevent electromagnetic interference.



## 7. Installation Guidelines

- Ensure the installation surface is clean, flat, and free of debris.
- Use the recommended mounting brackets and alignment tools for precise positioning.
- Align the grating with the measurement axis, ensuring no twists or bends.
- Avoid exposure to contaminants like oil or water during installation.

## 8. Operation Instructions

- Confirm proper alignment and calibration before use.
- Avoid applying excessive force to the grating during operation.
- Monitor for any deviation in readings and recalibrate as needed.

## 9. Maintenance and Troubleshooting

- **Maintenance:**

- Clean the grating surface using a soft, lint-free cloth and alcohol-based cleaner.
- Periodically check for physical damage or misalignment.
- Tighten loose screws or replace worn-out components.

- **Troubleshooting:**

- For inconsistent measurements, check alignment and recalibrate.
- Ensure optical sensors are free of obstructions or contamination.
- Contact technical support if problems persist.

## 10. Applications

The steel belt grating is commonly used in:

- CNC machining and automation.
- Robotic positioning systems.
- Precision metrology instruments.
- Industrial manufacturing processes.