

3-Axis FORCE Sensor

OMD-20-FE-200N

Description:

OptoForce 3D sensors measure the magnitude and the direction of F_x , F_y , and F_z forces based purely on **optical principles**. Depending on the application, **semi-spherical** and **flat top** versions are available. We advise these sensors for low budget research programs and for measurements where torque sensing is unnecessary. Semi-spherical sensors are ideal as sensitive **fingertips** for humanoid robot hands, industrial **grippers**, harvesting robots, and due to its **high durability** there are various applications in the field of **medical robotics** (rehabilitation) and **advanced robotics** (e.g. exoskeletons) as well.

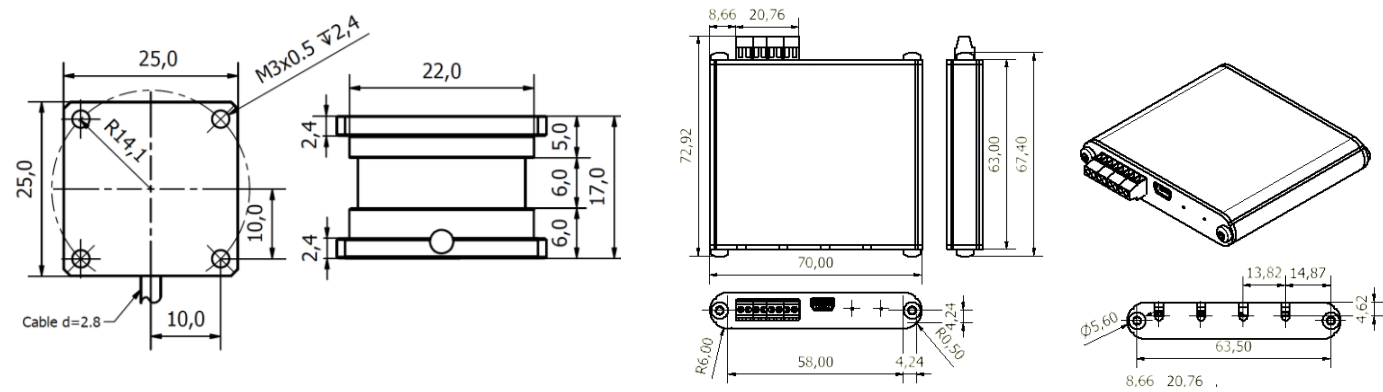
Benefits:

- Multi axis force measurement
- High resolution
- Highly adaptable product design
- Dust and water proof (IP65)
- High overload range
- Mechanical shock resistant
- Cost efficient solution
- Easy integration

| | Nominal Capacity | Typical Deformation |
|---------------------|--------------------|----------------------|
| F_{xy} | $\pm 20 \text{ N}$ | $\pm 1.5 \text{ mm}$ |
| F_z – compression | 200 N | 1.2 mm |
| F_z – tension | 100 N | 1 mm |



*: For F/T sensing kindly see our 6 axis datasheets



Sensor

DAQ (Non-Detachable)



SPECIFICATIONS

| | | | |
|---|--------------------------|---------------|-----------------|
| Sensor Type | 3 Axis Force Sensor | | |
| Dimensions | Height x width x length | | 17 x 25 x 25 mm |
| Weight | With 1 m cable (without) | | 23 g (14 g) |
| | Fz Compression | Fz Tension | Fxy |
| Nominal Capacity (N.C) | 200 N | 100 N | 20 N |
| Single axis overload | 200 % | 200 % | 200 % |
| Full scale nonlinearity | 2 % | 2 % | 2 % |
| Resolution | 12.5 mN | 12.5 mN | 2.1 mN |
| Single axis deformation at N.C | 1.2 mm | 1 mm | ±1.5 mm |
| | < 5% | | |
| Crosstalk (typical) | < 2 % | | |
| Hysteresis (measured on Fz axis, typical) | | | |
| Working temperature range | | | -40 °C - +80 °C |
| Power requirement | In continuous operation | | 10 mA |



INTERFACE TYPES

| | | |
|---|-----|------|
| USB | CAN | UART |
| Maximum sampling frequency 1000 Hz | | |
| Supported systems Windows; Linux; ROS; UR | | |

