

Load Cell

KMD



Load Cell KMD

The System

The load cell (KMD) is an electrical force transducer for the determination and monitoring of anchor forces, preload forces, crane forces and other large forces. The KMD consists of a steel cylinder made of stainless steel, which is equipped with strain gauges in a temperature-compensated arrangement. It is adapted to harsh operating conditions: Maintenance-free, dust-proof and waterproof according to IP 68, it can be used in a wide temperature range.

The supply of the KMD and the reading of the force signal is performed either manually with the enertec load cells – KOMO read-out device or with an automatic data logger. The electrical signal of the KMD is adjusted so that the resulting force can be read directly in [kN].

The KMD is offered for different load ranges with an inner diameter of the measurement cylinder that is adapted to the anchor diameter. For the selection of the load range, it should be taken into account that, for enertec load cells, the rated load is equal to the permissible constant load. The KMD may be overloaded temporarily by 30%.

The specified maximum error is max. 1% when the bearing areas of the load cells are flat and parallel to each other.

Our load cells have an integrated temperature sensor for measuring the cell temperature. This way, measured forces can be correlated with the temperature on the structure. The load cell itself and the measuring cables are fully temperature-compensated.

The load cell includes an integrated amplifier. Thanks to this amplifier, a signal of several volts is transferred, in contrast to a signal in the range of a few millivolts without an integrated amplifier. As a result, our load cells are particularly insensitive to stray fields and long measurement cables. Especially in the environment of electrical cables or rail traffic, this provides great advantages for accurate measurements. Information for the KMD can be stored in an internal memory, e.g. serial number, site number and cell number.

These are read for each measurement with the read-out device, so that the measured values can always be assigned reliably to the correct load cell and time. The load cells can be read-out manually with the KOMO hand-held device or may be monitored automatically using our data logger or our wireless sensor network.



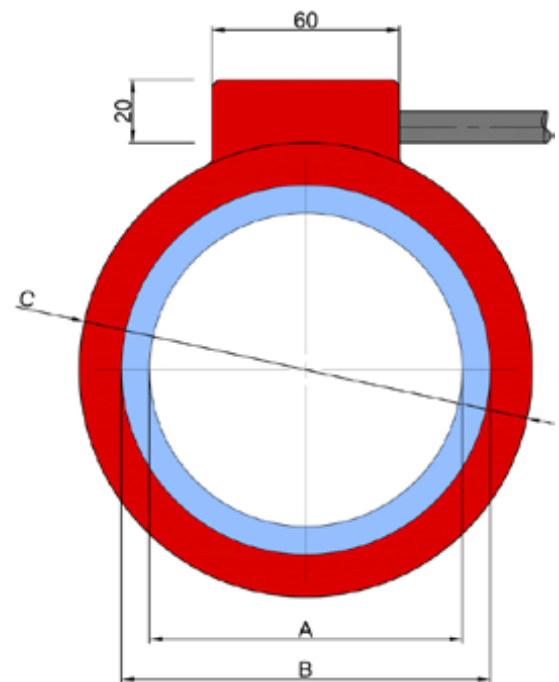
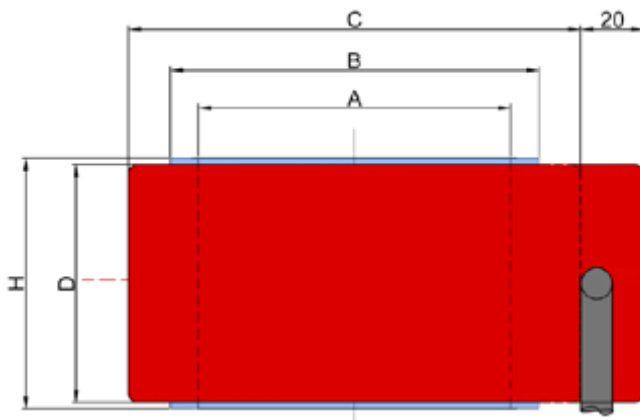
Key Features

- Load cells for 800 to 10,000 [kN] nominal force
- Nominal force is equivalent to constant force
- 30% overload for a short time
- Elastic element from stainless steel
- Optionally Steel Group I (redline) or Steel Group III (blue line) according to SN 179
- Can be used in aggressive, acid- and chloride-containing environments such as road tunnels and bridge undersides
- Protection class IP 68
- Integrated temperature sensor
- Integrated signal amplifier
- Insensitive to long cable lengths and electrical interference
- Measuring signal in Volt and mV/V
- Automatic identification of the load cell using the integrated memory for registration of site, cell number, date of installation, etc.
- Durable UV-, acid- and oil-resistant signal cables
- Durable, waterproof Lemo connector
- Optional overvoltage protection
- Arbitrary cable length



Technical Data

| Type | 800/82/80 | 1000/100/80 | 1500/125/85 | 2000/165/110 | 3000/190/130 | 5000/270/160 |
|--|---|-------------|-------------|--------------|--------------|--------------|
| Rated Load = Constant Load | 800 [kN] | 1,000 [kN] | 1,500 [kN] | 2,000 [kN] | 3,000 [kN] | 5,000 [kN] |
| Bearing Inner Diameter = Hole Diameter (A) | 82 [mm] | 100 [mm] | 125 [mm] | 165 [mm] | 190 [mm] | 270 [mm] |
| Bearing Outside Diameter (B) | 99.3 [mm] | 118 [mm] | 147 [mm] | 187 [mm] | 219 [mm] | 304 [mm] |
| Outside Diameter (C) | 125 [mm] | 145 [mm] | 177 [mm] | 220 [mm] | 260 [mm] | 345 [mm] |
| Shell Height (D) | 76 [mm] | 76 [mm] | 81 [mm] | 106 [mm] | 126 [mm] | 156 [mm] |
| Overall Height (H) | 80 [mm] | 80 [mm] | 85 [mm] | 110 [mm] | 130 [mm] | 160 [mm] |
| Resolution | 1 [kN] | | | | | |
| Total Error under Def. Conditions | ≤ 1% FS | | | | | |
| Temperature Error | 0.01% / K | | | | | |
| Temperature Range | -30 [°C] to +70 [°C], up to 200 [°C] on request | | | | | |
| Signal Magnitude | 0 to 7.5 [V] at rated load | | | | | |
| Cable | PUR jacket, shielded, UV-, water-, oil-, chloride-resistant | | | | | |
| Measuring Range Temperature Sensor | -40 [°C] to +80 [°C] | | | | | |
| Resolution Temperature Sensor | 0.5 [°C] | | | | | |
| Overvoltage Protection | optional | | | | | |
| Nominal Supply Voltage | 14 [V] | | | | | |
| Permissible Force / Short Periods | 130% of rated force | | | | | |
| Protection Class (DIN 40050) | IP68 | | | | | |
| Elastic Element Material | Redline: Stainless steel Group I according to SN 179, PREN 17.5-21 Blueline: Stainless steel Group III according to SN 179, PREN 30-38 | | | | | |
| Housing Material | 2K-PUR | | | | | |





Read-Out Device KOMO for Load Cells



Application

The Komo QL-3 is a portable meter for measurements with enertec load cells that is suitable for construction sites.

Thanks to the built-in memory, the measured values are automatically stored in the device and can later be transferred to a PC. There, the measured values can be processed further as desired. The temperature of the load cell is measured and stored for each force value.

The automatic assignment of measured values to the corresponding cell number with date and time stamp excludes measurement errors or data loss. The push-pull connector allows very easy connection of the meter with the load cells or the sockets in the measurement box. The load cell is detected, measurement is triggered automatically, the measured values are displayed and stored with the corresponding cell number and date/time stamps. Thus, a measurement is reliably documented within a few seconds.



Casing

The meter is robust and suitable for construction sites. When closed, it is water- and dust-proof. With a size of 216 x 180 x 102 [mm], the meter is very handy and can be held in one hand.

An carrying strap may also be attached. The display is equipped with a backlight and is very easy to read thanks to large letters.



Key Features

- Portable read-out device
- 4-line display
- Display of cell force and cell temperature
- Display of the serial number of the KMD
- Display of cell ID, site, etc., as entered by the user
- Force resolution 1 [kN]
- Temperature resolution 0.5 [°C]
- Operating temperature -25 to 50 [°C]
- Powered using rechargeable Li-ion battery, external battery charger
- Dimensions 216 x 180 x 102 mm
- Weight <2 [kg]
- Housing made of special high-impact plastic
- airworthy
- shock-resistant
- break-proof
- waterproof IP 67
- sand- and dust-proof
- airtight
- acid-resistant
- pressure-resistant



Software Komodo

No more lost or incorrectly recorded measured values

The Komo QL-4 measuring instrument is supplied with the corresponding KOMODO software. The software is platform-independent and runs without installation. If the instrument is connected to a computer via USB cable, the measured values stored on the KOMO can be transferred to the computer. The

measured values are stored in a simple text file in CSV format so that they can be processed further in any table software or simply stored. In addition, the software changes the KOMO settings and writes the desired information to the load cell.

Information on the construction site, measuring point and the type of KMD can be stored on the load cell. Different Nutzerprofile have different rights to change the settings.

| ID | Name | Date | Time | Status | Temperature | Force | Model | Serialnumber |
|----|----------|------------|----------|--------|-------------|-------|-------|--------------|
| 1 | 00000001 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000001 |
| 2 | 00000002 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000002 |
| 3 | 00000003 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000003 |
| 4 | 00000004 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000004 |
| 5 | 00000005 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000005 |
| 6 | 00000006 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000006 |
| 7 | 00000007 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000007 |
| 8 | 00000008 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000008 |
| 9 | 00000009 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000009 |
| 10 | 00000010 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000010 |
| 11 | 00000011 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000011 |
| 12 | 00000012 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000012 |
| 13 | 00000013 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000013 |
| 14 | 00000014 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000014 |
| 15 | 00000015 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000015 |
| 16 | 00000016 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000016 |
| 17 | 00000017 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000017 |
| 18 | 00000018 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000018 |
| 19 | 00000019 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000019 |
| 20 | 00000020 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000020 |
| 21 | 00000021 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000021 |
| 22 | 00000022 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000022 |
| 23 | 00000023 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000023 |
| 24 | 00000024 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000024 |
| 25 | 00000025 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000025 |
| 26 | 00000026 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000026 |
| 27 | 00000027 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000027 |
| 28 | 00000028 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000028 |
| 29 | 00000029 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000029 |
| 30 | 00000030 | 2000-01-01 | 00:00:00 | 0 | 100 | 20 | 100 | 00000030 |





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