ローレンツ社　トルクセンサー用語集

定格トルク　:Nominal Torque

定格トルクは、仕様内の測定レンジの上限です。
このレンジ内のトルクで御使用下さい。

許容トルク　:Service Torque

許容トルクとは、測定の仕様の変化なしに定格トルクを超えて掛けられるトルク範囲です。
仕様は満足しません。この範囲では通常の使用をしないで下さい。
出力は正常ではありません。許容トルクを超えると仕様に永久的な変化(零点シフト等)が生じます。

限界トルク　:Limit Torque

限界トルクは、トルクセンサーが破壊しないセンサーの最大トルクです。仕様に永久的な変化(零点のシフト等)を生じます。

最大トルク　:Ultimate Torque

最大トルクとは、機械的な破壊をトルクセンサーに引き起こさせるトルクの事です。

定格温度範囲　:Nominal Temperature Range

定格温度範囲とは、通常使用していただく温度範囲です。仕様などは、範囲内です。

許容温度範囲　:Service Temperature Range

許容温度範囲とは、動作の限界温度範囲です。この温度範囲では、動作はしますが、データは仕様外になります。この温度範囲では、通常使用しないで下さい。

注意:上記の内容はご通知無く変更されます。　2009.3.12 作成(Lorenz.170114a.doc).

日本総代理店　株式会社パシフィック　テクノロジー
〒273-0005 千葉県船橋市本町 6 丁目 18 番 5 号 アサヒ船橋ビル 602
TEL:047-426-1650　FAX:047-426-1652
E-mail: sales@pac-tech.com　URL: http://www.pac-tech.com

Obere Schloßstr.131 ☎ 07172 /93730-0
73553 Alfdorf Fax 07172 /93730-22

Terms and Definitions for Torque Transducer

The definitions of the technical characteristics for all sensors are widely referring to the DIN 51309.

Passive Transducer
A passive transducer is a sensor without amplifier. The output signal of the sensor is dependent from the used strain gauges. In general strain gauges with a sensitivity from 0,5 till 3mV / V will be used.

Active Transducer
An active transducer is a sensor with amplifier. Usually the output signal of the sensor may be ±10V, ±5V, 0...20mA, 4...20mA, 10 ±10mA or 12 ±8mA. All sensors of the Lorenz Messtechnik can be mounted with this signals.

Measurement Range
The measurement range is the load area of the guaranteed error limits of the data sheet that may not be exceeded.

Nonrepeatability
The nonrepeatability is a dimension for the relative standard deviation of the output signal resulted from ten repeated measurements on two points of the characteristic line with at the rate of same mechanical sizes and measurement steps.

Accuracy Class
The biggest single error of the sensors output signal is smaller than the value of the accuracy class (the tolerance of the sensitivity is not taken into account).

Nominal Torque
The nominal torque is the load of the transducer on the upper limit of the measurement range in that the guaranteed error limits of the data sheet may not be exceeded.

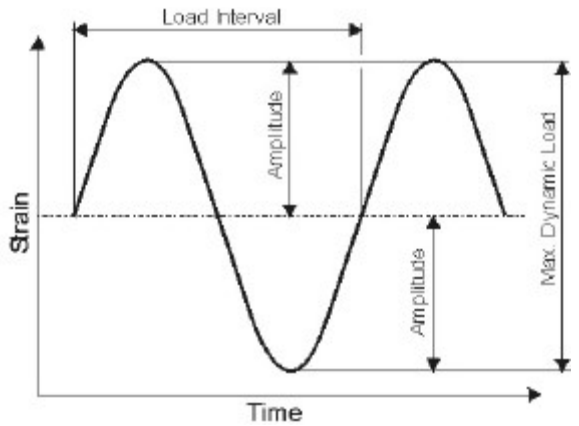
Service Torque
The service torque is the biggest torque the sensor can be loaded without changes of the specific characteristics of the measurement. The service torque range should be used only in exceptional cases.

Limit Torque
The limit torque is the maximal allowable torque the sensor can be loaded without remaining changes of the specific characteristics of the measurement until the service torque. The specific limits of error are not valid at limit torque.

Ultimate Torque
The ultimate torque is the torque over which a mechanical destruction becomes possible.

Signal
The signal is the digital output signal of a sensor with angle / speed control. Usually it is a 5V TTL-signal.

Max. Dynamic Load (according to DIN 50100)
The maximal dynamic load is an amplitude of a sinus formed alternating load in relation of the nominal torque of the sensor. The sensor can be stressed with minimal 10^7 intervals of maximal dynamic load without changes of the specific characteristics of the measurement until the nominal torque.



Bridge Resistance
The bridge resistance is the ohmic resistance of the measuring bridge.

Temperature Coefficient of Sensitivity
The temp. coeff. of sensitivity (in relation of the sensitivity) is the relative change of the actual sensitivity resulting from a change of the ambient temperature of 10 K.

Temperature Coefficient of Zero
The temp. coeff. of zero (in relation of the sensitivity) is the relative change of the output signal of an unloaded sensor resulting from a change of the ambient temperature of 10 K.

Nominal Temperature Range
The nominal temperature range is the span of the ambient temperature, in which the sensor can be used in keeping its technical data and error limits.

Service Temperature Range
The service temperature range is the span of the ambient temperature, in which the sensor can be used in spreading the error limits.

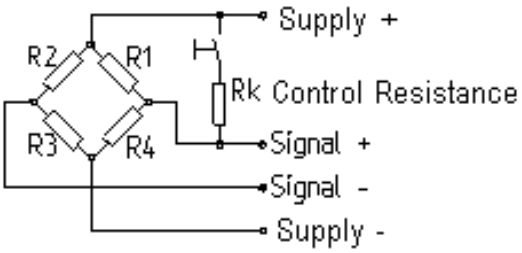
Excitation Voltage
The excitation voltage is the voltage the passive transducer needs to run without failures.

Sensitivity / Nominal Balance
The sensitivity / nominal balance is the theoretical output signal until the nominal torque.

Supply Voltage
The supply voltage is the voltage the active transducer needs to run without failures.

Level of Protection according to DIN VDE0470, EN 60529 (replacement for the DIN 40050)
The level of protection is signed with the shortcut IP and a two-figured reference number. The number defines the touch-, foreign body- and water protection for electrical devices.

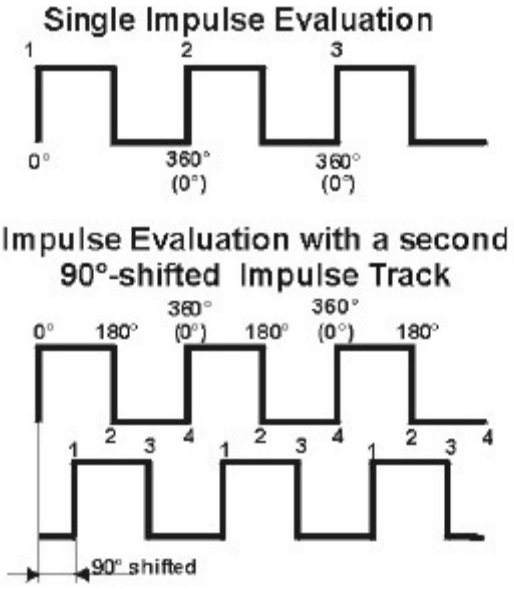
Calibration Control
With the control resistance a signal, equal the nominal load signal, will be generated inside the sensor.
Benefit: Recalibrations will be reduced. Zero point and sensitivity can be controlled for each measurement.
Description:
With the parallel putting of the resistance R_K to the measuring bridge R_1 , the measuring bridge gets a definite electrical detuning that caused an output signal 50 or 100% of the nominal load signal.



The calibration control of a sensor with an analog output signal can be switched on and off by a voltage signal. Two setting positions can be defined:
L < 2,0V (low- signal) and H > 3,5V (high- signal).
The calibration control of a sensor with a digital output signal can be controlled by software.

Twist Angle by Nominal Torque
The twist angle by nominal torque is the measure of the angular displacement through which a fastener is turned as a result of torque as high as the torque load. The natural resonance of the measurement body changes with the angular displacement. The twist angle should be so small as possible to prevent interferences caused by the changing of the natural resonance.

Impulses / Revolution
The impulses / revolution are the resolution of the angle / speed control of the sensor. With a second 90°-shifted impulse track and edge evaluation the impulses / revolution can be quadruplicated.



Reading Rate / Sample Rate
The reading rate or sample rate describes the number of the measurements per second.

Moment of Inertia
The moment of inertia is the counteracting moment of the measurement body in opposition to the acceleration moment. The moment of inertia should be so small as possible to minimize the load of the measurement section.

Maximal Thrust Load
The max. thrust load is the maximal allowable force into the direction of the measurement's axis.

Output Signal
The output signal is the signal of an active transducer.