

DB-DA/DB-DC SERIES

TRANSDUCERS FOR MEASURING THE RADIAL LOAD OF BALL BEARINGS

FEATURES

- Nominal Capacity:
 - DB-DA: 50, 100, 200, 350 & 750 N
 - DB-DC: 1200 N
- Built-in Overload Protection up to 10x nominal load
 - DB-DA: 2x overload nominal load
 - DB-DC (no mechanical protection)
- Combined Error due to Non-Linearity and Hysteresis: $< \pm 0.1\%$ (DB-DA-50 $< \pm 0.2\%$)
- Hermetically Sealed; IP67 Protection Class
- 3 Temperature Ranges available: 0...60°C, 0...100°C & 0...160°C
- 3 Bearing Diameter Capabilities: $\varnothing 17, 20$ & 25 mm
- Rust-resistant Metallic Construction
- Easy to install



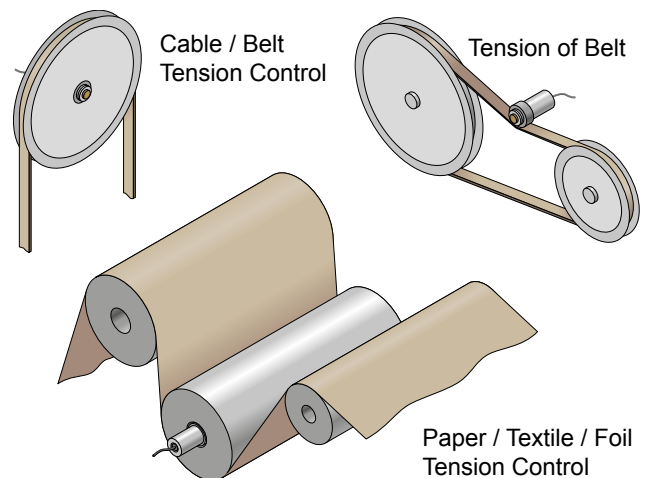
Fig. 1: DBDA-100 | Transducers for measuring the radial load of ball bearings

DESCRIPTION

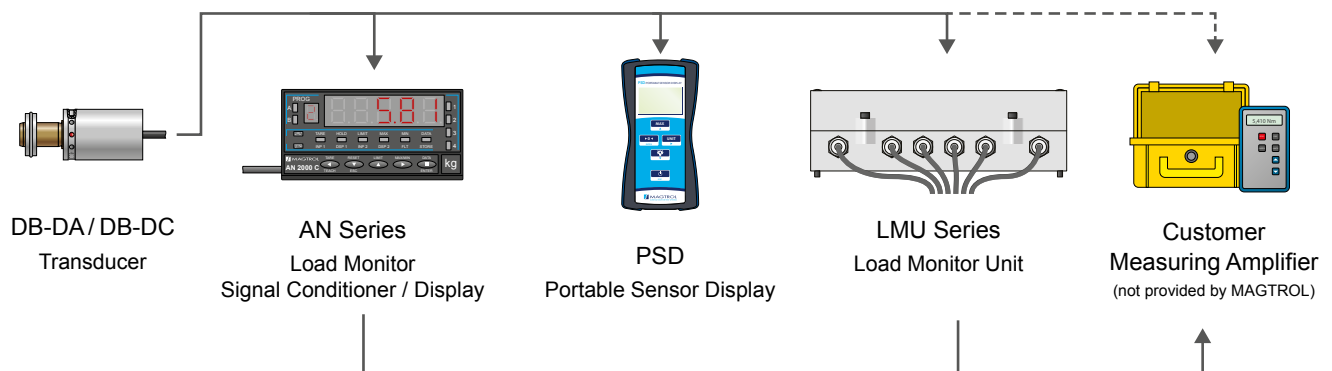
Magtrol DB-DA and DB-DC transducers are designed for measuring radial forces in ball bearings. Available in several diameters and temperature ranges, these transducers incorporate strain gauge technology and provide a signal output proportional to the force to be measured.

APPLICATIONS

This transducer is ideally suited for belt, paper or textile tension control and for other measurement of radial forces on rotation cylinders. When connected to a signal conditioner, this transducer is an essential element for highly accurate tension control regulation.



SYSTEM CONFIGURATION



SPECIFICATIONS

MODEL	DB-DA-50	DB-DA-100	DB-DA-200	DB-DA-350	DB-DA-750	DB-DC-1200
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TRANSDUCER RATINGS

Nominal Load	50 N	100 N	200 N	350 N	750 N	1200 N
Admissible Overload	200 %		150 %		200 %	
Overload Limit (without zero drift) ^{a)}	2000 %		1500 %		1000 %	N/A
Overload at Rupture	> 2000 %		> 1500 %		> 1000 %	500 %
Maximum Dynamic Load (double amplitude)	80 %					
Minimum Axial Retention Load of Safety Ring with Safety Pin	1000 N					
Displacement at Nominal Load	~0.02 mm	~0.04 mm	~0.05 mm	~0.08 mm	~0.05 mm	

ELECTRICAL CHARACTERISTICS

Nominal Sensitivity	1 mV/V ±3 %					
Zero Load Signal	< ±0.3 mV/V					
Input Impedance	400 Ω					
Output Impedance	350 Ω					
Insulation Resistance	> 10 ⁹ Ω					
Supply Voltage	5 ... 10 VDC (max. 15 VDC)					
Combined Error (non-linearity + hysteresis)	< ±0.2 %		< ±0.1 %			

ENVIRONMENT & MECHANICAL CHARACTERISTICS

Reference Temperature Nominal	+23 °C					
Operating Temperature (3 ranges)	0 °C ... +60 °C / 0 °C ... +100 °C / 0 °C ... +160 °C					
Temperature Influence on Zero	< ±0.15 %/10K		< ±0.1 %/10K			
Temperature Influence on Sensitivity ^{b)}	< +0.3 %					
Protection Class	IP67					
Color of Marking Point ^{c)}	Orange	Green	White	Red	Yellow	Blue
Weight	~0.5 kg					

ELECTRICAL CONNECTIONS

Connection cable	Shielded cable, length 0.25 m					
Standard connector ^{d)}	LEMO - FFA.2S.304.CLAL52					

Wiring diagram for version 0 ... 60 °C (with connector LEMO)		View from outside Green — Signal - White — Signal + Yellow — Supply - Brown — Supply + Shield — Case
Wiring diagram for version 0 ... 160 °C^{e)} (with connector LEMO)		View from outside Black — Signal - White — Signal + Blue — Supply - Red — Supply + Shield — Case

a) Maximum overload without damage; active mechanical overload protection from approx. 150...200% (DB-DA 50/100: 250%).

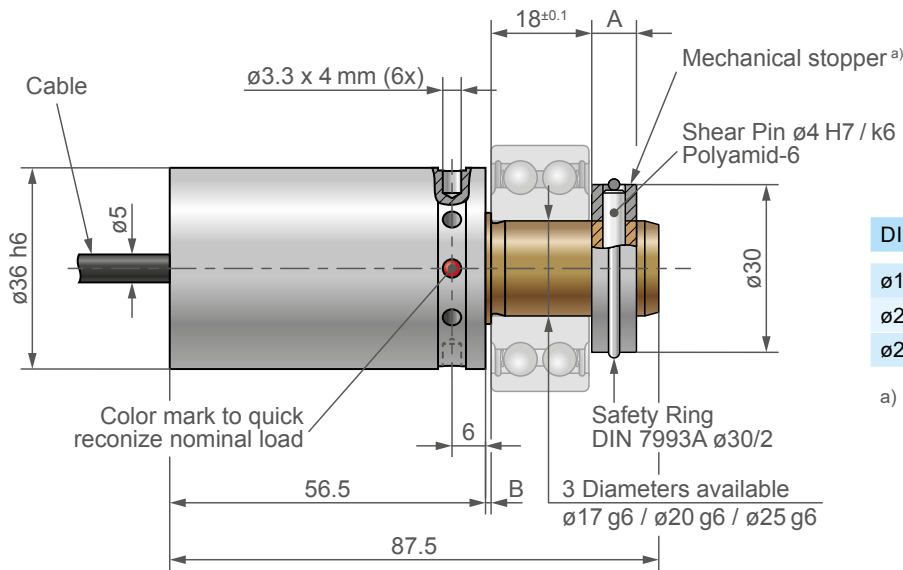
b) On request: tolerance $\Delta \text{signal} / \Delta \text{temperature} = < +0.12\% / 10\text{K}$.

c) In order to facilitate the identification of the product (mainly its load range), the DB Sensors are equipped with a specific colored marking point.

d) Other connectors or free wiring available on request.

e) The high temperature versions have a more resistant cable. This results in a different wiring.

DIMENSIONS



DIAMETER	A	B
ø17 mm	8 mm	1.0 mm
ø20 mm	7 mm	2.5 mm
ø25 mm	N/A ^{a)}	4.0 mm

a) Mechanical stopper is not available for DB-DA-XXX-25 (ø25mm) and for DB-DC-1200-XX (all diameters)

RELATED PRODUCTS

LMU SERIES - LOAD MONITORING UNIT



LMU 216
Load Monitoring Unit

Magtrol's Load Monitoring Units are used for measuring load, force and weight from signals generated by strain gauge transducers. Specifically designed for use with Magtrol's Load Measuring Pins and Load-Force-Weight Sensors, the LMU Series provides excitation voltage while conditioning the bridge output signal.

Each unit contains DIP-switches and jumpers for greater flexibility and complete adaptability. User-defined alarm limits can be configured into the unit, which when combined with our sensors, provides a safe and rugged measurement system that continuously monitors for short-circuits and interrupted signal lines. Magtrol LMUs are specially designed for use in harsh environments and are suitable for crane security systems.

AN SERIES - LOAD MONITOR DISPLAY WITH INTEGRATED SIGNAL CONDITIONER



AN 1500 M | Load
Monitor Display

The AN 1500 M Load Monitor is designed to process and display signals coming from various types of transducers (weight, load, pressure, torque, etc.) that use standard strain-gauge bridges.

The basic instrument is a soldered assembly composed of a main board, a tri-color programmable display and a power circuit. Standard features include the reading of the input variable as well as remote hold, reading and memorization of max and min values (peak / valley), tare and reset function.

ORDERING INFORMATION

ORDERING NUMBER	-	-	-	-	-
DB-DA, DB-DC : Model ^{a)}					
50, 100, 200, 350, 750, 1200 : Nominal Load ^{a)}					
17, 20, 25 : ø diameter					
blank : 0 ... 60 °C					
100 : 0 ... 100 °C					
160 : 0 ... 160 °C					

a) DB-DC can only be ordered as 1200 N version and reversely (a 1200 N load can only be operated with a DB-DC). For more information, please contact us.

Example: DB-DA Transducer, 350N nominal load, 17 mm diameter and 160 °C range would be ordered as: **DB-DA-350-17-160**

ACCESSORIES

DESCRIPTION	ORDERING NUMBER
Spare safety pins ø4 mm; Polyamid-6	DB-DA-50-17-06
Cable extension, 5m	DB-DA-50-17-50
Cable extension, 10m	DB-DA-50-17-55