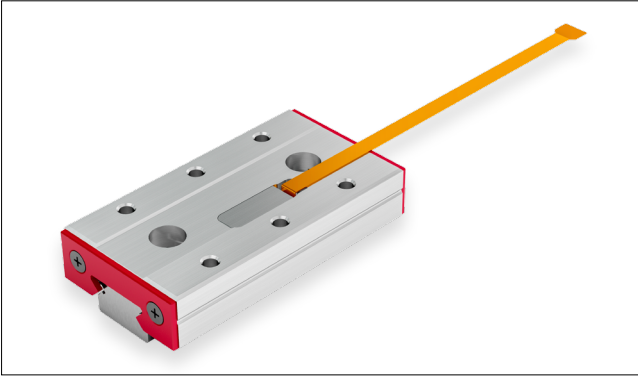


MINISLIDE MSQscale

A unique miniature guideway with integrated measuring system and a resolution of 0.1 μm

1 MINISLIDE MSQSCALE MEASURING SYSTEM



Linear measuring system integrated into the MINISLIDE micro frictionless table

This extraordinary innovation combines «guiding» and «measuring» in a highly integrated design. MSQscale makes the most compact applications possible and significantly simplifies assembly and mounting. As a result, the MSQscale is an extremely economical solution which meets stringent technical requirements.

The MSQscale is based on our proven MINISLIDE MSQ guide-ways and is available for our entire product range.

2 BRIEF OVERVIEW OF THE ADVANTAGES

Highly integrated, compact design

- The sensor is perfectly integrated into the carriage and sealed
- The dimensional scale is marked directly on the guideway

Minimal design planning

- The costs of a separate distance measuring system is not required
- More compact designs can be implemented

Quick and easy mounting

- The MSQscale is ready to install upon delivery
- No need for additional components and special mounting (as would be required for a glass scale, for example)
- No need to adjust the read head separately
- No need to align or mount the measuring scale

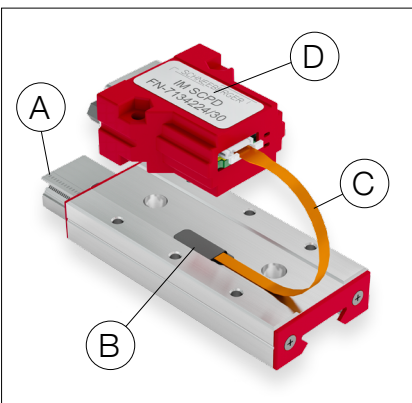
Consistently high level of accuracy

- Measurement is carried out directly during the work process. This considerably reduces Abbe errors
- Immune to vibration and shock as a single assembly
- The measuring scale is part of the guideway. This reduces the effect of the thermal aspect ratio and amount of compensation required for the controller
- Runs smoothly with no pulsation because the balls are always preloaded

High level of reliability and long service life

- The MSQscale is based on the successful MINISLIDE MSQ design

3 MSQSCALE WORKING METHOD AND COMPONENTS



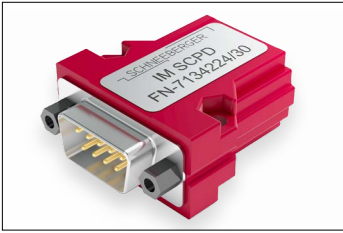
The MSQscale is an optical, incremental measuring system made up of the MINISLIDE MSQ guide system and the following additional components:

- A Dimensional scale on the guide rail
- B Optical sensor integrated into the carriage
- C Flexible print (must not be exposed to dynamic loads)
- D Interface module

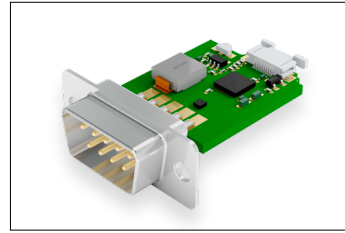
The high-precision dimensional scale is part of the hardened guideway's surface. The sensor records the optical signals and supplies the raw signals. These are processed in the interface module in either analog or digital format.

4 OPTIONS

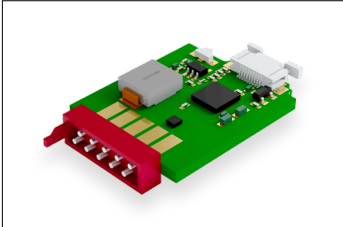
There are four structural types of interface modules available:



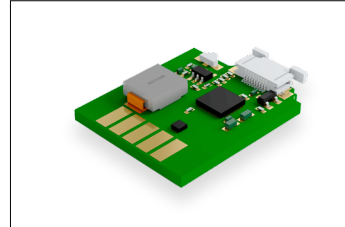
With housing
With D-Sub 9 connector



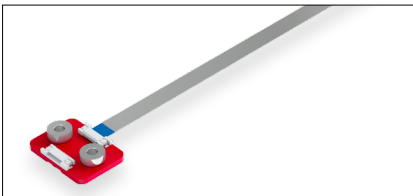
Without housing
With D-Sub 9 connector



Without housing
With Micro Match
connector



Without housing
Without connector
With solder terminals



A flexible flat ribbon cable (flat flex cable, or FFC) can be used between the flexible print and the interface module if the flexible print for the sensor is too short for the application. This will enable the interface module to be positioned in a flexible way. These cables can be exposed to dynamic loads.

FFC cables are available in three lengths: 250 mm, 400 mm and 600 mm.

5 SPECIFICATIONS

MSQscale 7

System lengths in mm: 30 – 70
Strokes in mm: 20 – 58

MSQscale 9

System lengths in mm: 40 – 80
Strokes in mm: 34 – 66

MSQscale 12

System lengths in mm: 50 – 100
Strokes in mm: 45 – 70

MSQscale 15

System lengths in mm: 70 – 130
Strokes in mm: 66 – 102

Performance parameters:

| | |
|---------------------------|--|
| Resolution ⁽¹⁾ | TTL output 0.1 μm (optional: 1 μm / 10 μm) |
| Accuracy ⁽¹⁾ | +/- 3 μm |
| Repeatability | Unidirectional +/- 0.1 μm Bidirectional +/- 0.2 μm |
| Dimensional scale | Pitch 100 μm Coefficient of expansion $11.7 \times 10^{-6} \text{ K}^{-1}$ |
| Preload | Zero backlash |

Materials:

| | |
|-----------------------------|-----------------------------------|
| Guideways, carriages, balls | Stainless steel, through-hardened |
| Cage and pinion | PEEK |
| End pieces | PEEK |

| | |
|-------------------|--------------------|
| Max. acceleration | 300 m/s^2 |
| Max. speed | 3 m/s |

Areas of application:

| | |
|-------------------|--|
| Temperature range | -40 °C to +80 °C (-40 °F to +176 °F) |
| Vacuum | High vacuum (max. 10^{-7} mbar) |
| Humidity | 10 % – 70 % (non-condensing) |
| Cleanroom | Cleanroom class ISO 7 (in accordance with ISO 14644-1) |

| | |
|---------------------|--|
| Supply voltage | 5 V DC +/- 5 % |
| Current consumption | 60 mA (analog) / 70 mA (digital) |
| Output signal | Analog: 1 V _{SS} (at 100 Ω) Digital: TTL in accordance with RS 422 standard |
| Source format | Analog: Differential sin/cos analog signals with reference pulse Digital: Differential, interpolated digital signals (A, B, R) The reference signal is synchronised with the incremental signals |

⁽¹⁾ The values apply at 20 °C (68 °F)

PROSPECTUSES

- COMPANY BROCHURE
- CUSTOMIZED BEARINGS
- GEAR RACKS
- LINEAR BEARINGS and RECIRCULATING UNITS
- MINERAL CASTING SCHNEEBERGER
- MINI-X MINIRAIL / MINISCALE PLUS / MINISLIDE
- MONORAIL and AMS profiled linear guideways with integrated measuring system
- MONORAIL and AMS application catalog
- POSITIONING SYSTEMS
- SLIDES



SCHNEEBERGER COMPANIES

SWITZERLAND

SCHNEEBERGER AG
Lineartechnik
St. Urbanstrasse 12
4914 Roggwil/BE

Phone +41 62 918 41 11
Fax +41 62 918 41 00

E-Mail:
info-ch@schneeburger.com

JAPAN

Nippon SCHNEEBERGER K.K.
Crane Toranomon Bldg 7F
3-20-5 Toranomon, Minato-ku
Tokyo 105-0001

Phone +81 3 6435 7474
Fax +81 3 6435 7475

E-Mail:
info-j@schneeburger.com

JAPAN

日本シュネーベルガー株式会社
〒105-0001
東京都港区虎ノ門3-20-5
クレイン虎ノ門ビル7F

電話 03 6435 7474
ファクス 03 6435 7475

Eメール:
info-j@schneeburger.com

GERMANY

SCHNEEBERGER GmbH
Gräfenau
75339 Höfen/Enz

Phone +49 7081 782 0
Fax +49 7081 782 124

E-Mail:
info-d@schneeburger.com

CHINA

SCHNEEBERGER
(Shanghai) Co., Ltd.
Rm 606, Shang Gao International
Building
No. 137 XianXia Road
200051 Shanghai

Phone +86 21 6209 0037 / 27
Fax +86 21 6209 0102

E-Mail:
info-cn@schneeburger.com

CHINA

施耐博格 (上海) 传动技术有限公司
上海市长宁区
仙霞路137号盛高国际
大厦606室, 上海 200051

电话 +86 21 6209 0027
传真 +86 21 6209 0102

邮箱:
info-cn@schneeburger.com

ITALY

SCHNEEBERGER S.r.l.
Via Soldani 10
21021 Angera (VA)

Phone +39 0331 93 2010
Fax +39 0331 93 1655

E-Mail:
info-i@schneeburger.com

KOREA

SCHNEEBERGER Korea Ltd.
Garden5 Tool
10, Chungmin-ro,
Songpa-gu, Seoul,
Korea 05840

Phone +82 2 554 2971
Fax +82 2 554 3971

E-Mail:
info-kr@schneeburger.com

KOREA

슈니베르코리아 유한회사
05840 서울시 송파구 충민로 10
가든파이브 톨관 10층

전화 +82 2 554 2971
팩스 +82 2 554 3971

이메일:
info-kr@schneeburger.com

USA

SCHNEEBERGER Inc.
44 Sixth Road,
Woburn, MA 01801-1759

Phone +1 781 271 0140
Fax +1 781 932 4127

E-Mail:
info-usa@schneeburger.com

SINGAPORE

SCHNEEBERGER Linear
Technology Pte. Ltd.
160 Paya Lebar Road, #05-04
Orion Industrial Building
409022 Singapore

Phone + 65 6841 2385
Fax + 65 6841 3408

E-Mail:
info-sg@schneeburger.com

INDIA

SCHNEEBERGER India Pvt. Ltd.
406, Satra Plaza,
Palm Beach Road, Sector 19D Vashi,
400 703 New Mumbai

Phone +91 22 6461 0646
Fax +91 22 6461 1756

E-Mail:
info-in@schneeburger.com

SCHNEEBERGER MINERAL CASTING

CZECH REPUBLIC

SCHNEEBERGER
Mineralgusstechnik s.r.o
Prumyslový park 32/20
350 02 Cheb – Dolní Dvory

Phone +420 354 400 941
Fax +420 354 400 940

E-Mail:
info-mineralguss@schneeburger.com

CHINA

SCHNEEBERGER Changzhou
Precision Systems Co. Ltd.
137 Hanjiang Road
Changzhou New district
213000 Changzhou, Jiangsu

Phone +86 519 8988 3938
Fax +86 519 8988 5115

E-Mail:
info-mineralcasting@schneeburger.com

CHINA

施耐博格 (常州) 测试系统有限公司
汉江路137, 常州新区, 常州213022

电话 +86 519 8988 3938
传真 +86 519 8988 5115

邮箱:
info-mineralcasting@schneeburger.com

SCHNEEBERGER SALES DEPARTMENTS

AUSTRIA AND SOUTH EAST EUROPE

Mobile +43 676 935 1035

E-Mail:
info-a@schneeburger.com

BENELUX

Mobile +31 6 5326 3929

E-Mail:
info-nl@schneeburger.com

DENMARK, SWEDEN

Mobile +31 6 5326 3929

E-Mail:
info-nl@schneeburger.com

FRANCE

Mobile +33 6 0941 6269

E-Mail:
info-f@schneeburger.com

GREAT BRITAIN

Mobile +44 77 8814 5645

E-Mail:
info-uk@schneeburger.com

ISRAEL

Mobile +972 5 0551 7920

E-Mail:
info-il@schneeburger.com

POLAND, SLOVAKIA, CZECH REPUBLIC

Mobile +420 6 0278 4077

E-Mail:
info-cz@schneeburger.com

RUSSIA, BELARUS, UKRAINE

Mobile +7 985 960 85 53
Mobile +38 050 407 6789
Mobile +37 529 860 0410

E-Mail:
info-ru@schneeburger.com

SPAIN, PORTUGAL ANDORRA

Mobile +34 69 559 05 99

E-Mail:
info-es@schneeburger.com

TURKEY

Mobile +90 545 320 83 55

E-Mail:
info-tr@schneeburger.com

www.schneeburger.com