# Linear Scale

# SA57

**SALES & SERVICE:**
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## Absolute type scale for feedback applications

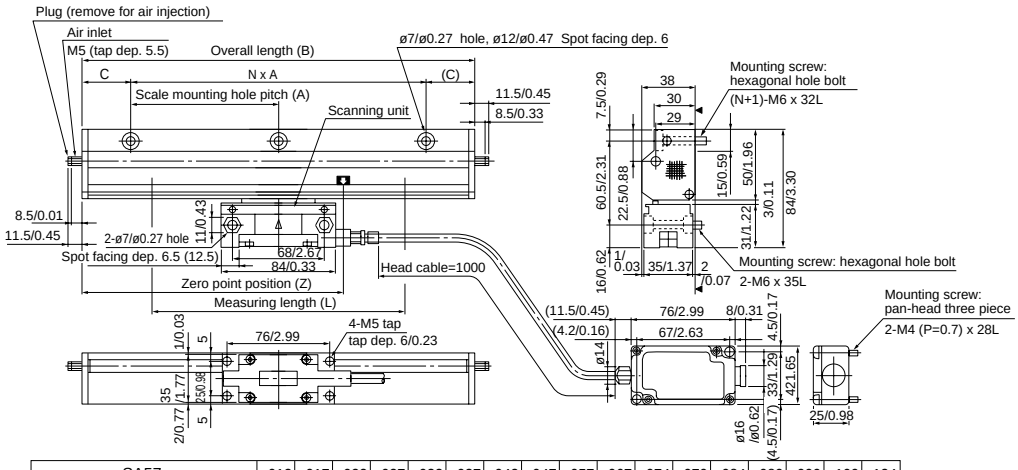
- Full-absolute type. Does not require batteries or rotary encoder. Machine homing not required.
- Absolute signal output by TX serial transmission and incremental A/B phase output by differential line driver.
- Resolutions: 0.1, 0.5 and 1 µm
- Measuring lengths: 120 to 2270 mm / 4.7" to 48.8" (17 models)
- Perfect for positioning machine tools, various industrial equipment and hydraulic cylinders.

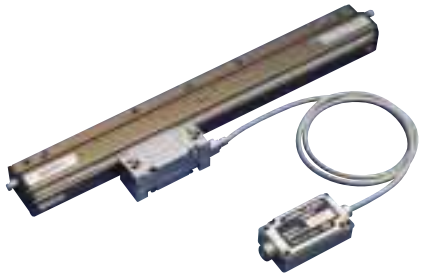
## Specifications

| Model | SA57- | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | C3A3 | C3B3 | D3B3 | D3C3 | D3B3 | D3C5 | E3C3 | E3D3 | F3C5 | E3D5 |
| Measuring length L mm (inch) | 120/170/220/270/320/370/420/470/570/670/740/790/840/890/990/1090/1240 (4.7,6.6,8.6,10.6,12.5,14.5,16.5,18.5,22.4,26.3,29.1,31.1,33,35,38.9,42.9,48.8) | | | | | | | | | |
| Resolution | 0.1 µm | | 0.5 µm | | | | 1 µm | | | |
| Engraving pitch | 80 µm | | | | | | | | | |
| Minimum phase difference | 0.12 µs | 0.3 µs | 0.3 µs | 0.6 µs | 0.3 µs | 0.6 µs | 0.6 µs | 1.2 µs | 0.6 µs | 1.2 µs |
| Accuracy (at 20 ˚C 68 ˚F) | ± 3 µm | | | | ± 5 µm | | ± 3 µm | | ± 5 µm | |
| Max. response speed | 33.4 m/min | 11 m/min | 54.1 m/min | 31.1 m/min | 54.1 m/min | 31.1 m/min | 57.5 m/min | 26 m/min | 57.5 m/min | 26 m/min |
| Zero point | One point at the center (standard) | | | | | | | | | |
| Light source | Infrared LED | | | | | | | | | |
| Photo detector | Photo diode | | | | | | | | | |
| Expansion coefficient | (8.8 ± 1) x $10^{-6}$/ ˚C | | | | | | | | | |
| Operating temperature | 0 ˚C to 45 ˚C / 32 ˚F to 113 ˚F | | | | | | | | | |
| Storage temperature | -10 ˚C to 60 ˚C / 14 ˚F to 140 ˚F | | | | | | | | | |
| Humidity range | Relative humidity 30 to 90 % (no condensation) | | | | | | | | | |
| Protective design grade | (1) Equivalent to IP53* (2) Improvement of the protective design grade (see the instruction manual) | | | | | | | | | |
| Atmosphere | Corrosive gas should not be contained in the atmosphere. | | | | | | | | | |
| Vibration resistance | 49 m/s² (according to our vibration test data, 50 to 1000 Hz for 30 min) | | | | | | | | | |
| Shock resistance | 98 m/s² (according to our vibration test, 11 ms, in each of the X, Y, Z directions) | | | | | | | | | |
| Sliding resistance of detector head | 3.9N (average) | | | | | | | | | |
| Power supply | 5V DC ± 5 % | | | | | | | | | |
| Power consumption | Approx. 250 mA | | | | | | | | | |

*Air purge may be used to increase resistance to dust, humidity and condensation.

## Dimensions




| SA57- | | 012 | 017 | 022 | 027 | 032 | 037 | 042 | 047 | 057 | 067 | 074 | 079 | 084 | 089 | 099 | 109 | 124 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Measuring length | L (mm) | 120 | 170 | 220 | 270 | 320 | 370 | 420 | 470 | 570 | 670 | 740 | 790 | 840 | 890 | 990 | 1090 | 1240 |
| Overall length | B (mm) | 202 | 252 | 302 | 352 | 402 | 452 | 502 | 552 | 652 | 752 | 822 | 872 | 922 | 972 | 1072 | 1172 | 1322 |
| | C (mm) | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 31 | 36 | 31 | 41 | 36 | 36 | 36 | 36 |
| Mounting hole pitch | A (mm) | 130 | 180 | 230 | 280 | 165 | 190 | 215 | 240 | 290 | 230 | 250 | 270 | 280 | 300 | 250 | 275 | 250 |
| | N | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 5 |
| Zero point position | Z (mm) | 101 | 126 | 151 | 176 | 201 | 226 | 251 | 276 | 326 | 376 | 411 | 436 | 461 | 486 | 536 | 586 | 661 |

Unit : mm/inch