

Specifications		
Model name	SQ47	SQ57
Effective length	90 to 3,740mm ^{(*)1}	70 to 3,770mm ^{(*)2}
Accuracy	±(1.5+1.5L/1000)μm	
Resolution	Selectable from 0.005/0.01/0.05/0.1/0.5/1μm	
Maximum response speed	200m/min	
Vibration resistance	250m/s ² (50 to 2,000Hz)	
Impact resistance	980m/s ² (11ms)	
Protective design grade	IP67	
Consumption current	1.35W typ (FANUC/Mitsubishi Electric/Yaskawa Electric) 2.1W typ (SIEMENS)	
Power supply voltage	DC5V (FANUC/Mitsubishi Electric/Yaskawa Electric) DC24V (SIEMENS)	
Operating temperature	0 to 50°C	
Output signal	Compatible with each serial interface	
Option	Connection cable	CH23 Series (Mitsubishi Electric / Yaskawa Electric) CH23A Series (FANUC) CH22 Series (SIEMENS)

Model name:

SQ◆◆-×××★S△▽□□□

□Reference point position^(*)

Distance from left end of effective length

▼Communication protocol

A:FANUC α/ai interface

B:Mitsubishi Electric Half duplex

D:Mitsubishi Electric Full duplex

F:Yaskawa Electric

Z:SIEMENS DRIVE-CLiQ (functional safety model)

△Resolution and polarity(See Table 1)

SAccuracy

±(1.5+1.5L/1000)μm

Effective length (L: mm)

★Cable lead-out direction (SQ47 only)

R: Right L: Left

XEffective length (in cm)

◆Type

(*)Mitsubishi Electric: fix (center of effective length)

SIEMENS: fix

Table1					
<FANUC/Mitsubishi Electric>					
(Mitsubishi Electric: Polarity + only)					
Model name	Polarity	Resolution	Model name	Polarity	Resolution
S		0.005μm	T		0.005μm
A		0.01μm	F		0.01μm
B		0.05μm	G		0.05μm
C	+	0.1μm	H		0.1μm
D		0.5μm	J		0.5μm
E		1μm	K		1μm

<Yaskawa Electric/SIEMENS>		
Model name	Polarity	Resolution
S		0.005μm
A	+	0.01μm

(*)1 For effective length exceeding 3,740 mm, please contact our sales department.
(*)2 For effective length exceeding 3,770 mm, please contact our sales department.

Dimensions

SQ47 series

Unit: mm

SQ57 series

Unit: mm

Please contact us for more details.

△ To use this product safely, please read the instruction manual carefully and thoroughly prior to usage.

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The contents of this literature are as of: February 2025
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Lineup

Absolute type
SmartSCALE

Stronger resistance to harsh environments
compared to SR27A / SR67A models

Magnescale Co., Ltd.

Stronger resistance to harsh environments

Air purging not necessary

Easy installation due to high installation tolerance

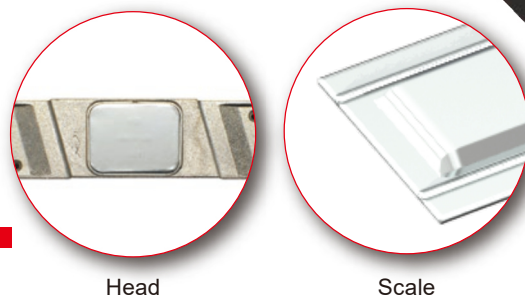
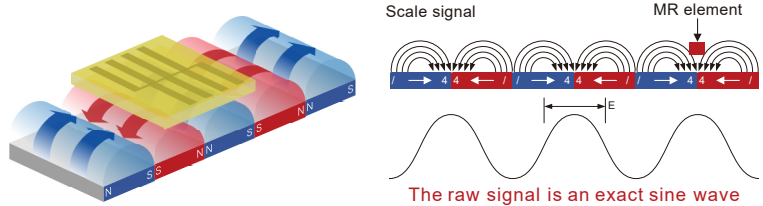
Non-expendable and contactless operating principle

Optimum speed control for maximum surface quality thanks to 5nm resolution

High resistance against coolant, water and oil; reading head and scale with protective grade IP67

Principle

Detection Principle
A thin-film MR element with a high-precision, low-distortion pattern arrangement is used as the detecting element. The resistance value of the MR element changes when the magnetic field acting on the element changes due to an alteration in the relative position between the element and the magnetic media. This change in resistance value is read electronically to detect the amount of positional change.



New technology

Development of a new magnetic medium

The output detection signal has improved 30% by changing the composition and consistency of the magnetic medium of the scale, and by improving the production method.

High output

The development of a high sensitivity sensor using a new TMR device

Utilizes a low strain sensor enabling 10 times higher sensitivity compared to the current model by the development of a TMR element based on the Spin-Valve method.

Higher sensitivity

Resistance change ratio is 10 times greater than the current model

New interpolation calculation method

Achieves 5nm resolution and improves interpolation accuracy by utilizing a new interpolation calculation method.

High resolution

1/1200 → 1/12800