

Absolute linear encoder  
Slim type

# SR27A



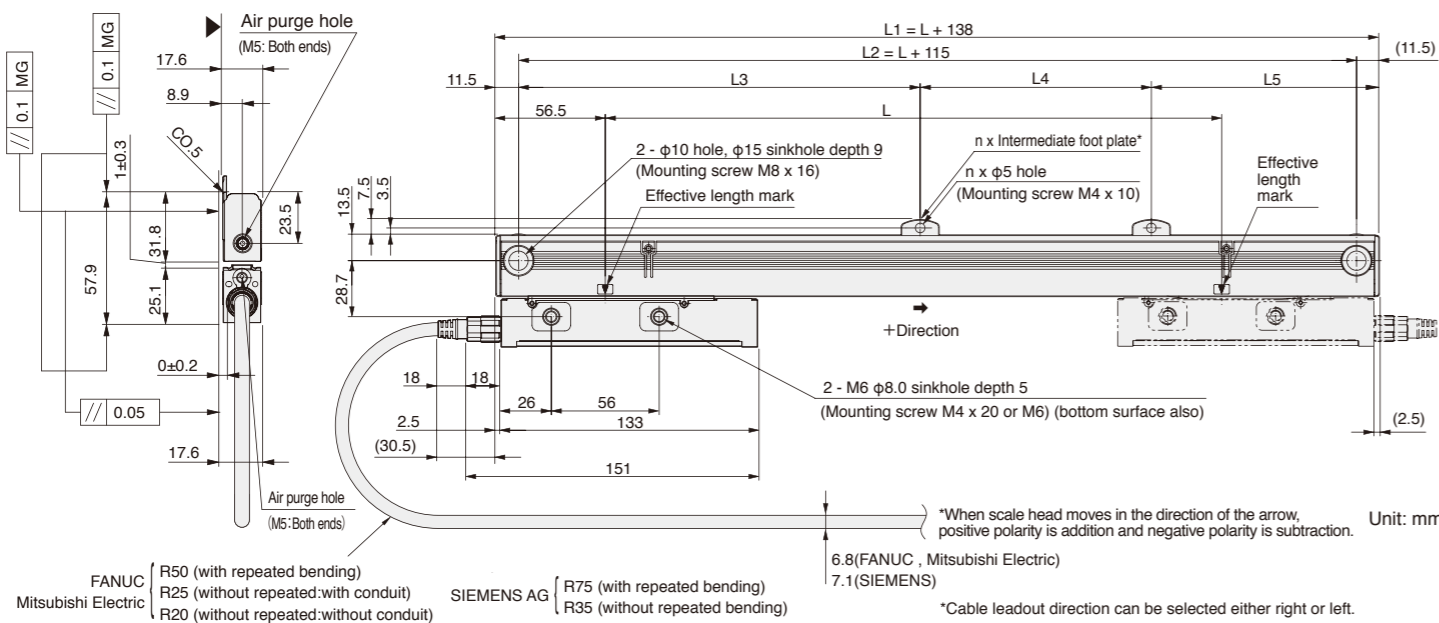
- Enables direct communication using the protocol of each supporting manufacturer without the requirement of an amplifier
- Magnetic system allows use even in environments with condensation, oil, and other adverse conditions
- 96mm diameter through-hole allows for design and mounting flexibility
- Dual head configuration reduces the effect of axial runout

FANUC

Mitsubishi Electric

SIEMENS

## Dimensions



Effective length	Total length	Mounting pitch					Number of intermediate foot plates
		L2	L3	L4	L5	n	
70	208	185	-	-	-	0	
120	258	235	-	-	-	0	
170	308	285	-	-	-	0	
220	358	335	-	-	-	0	
270	408	385	-	-	-	0	
320	458	435	-	-	-	0	
370	508	485	-	-	-	0	
420	558	535	-	-	-	0	
470	608	585	-	-	-	0	
520	658	635	-	-	-	0	
570	708	685	-	-	-	0	
620	758	735	-	-	-	0	
670	808	785	392.5	-	392.5	1	
720	858	835	417.5	-	417.5	1	

Effective length	Total length	Mounting pitch					Number of intermediate foot plates
		L2	L3	L4	L5	n	
770	908	885	442.5	-	442.5	1	
820	958	935	467.5	-	467.5	1	
920	1,058	1,035	517.5	-	517.5	1	
1,020	1,158	1,135	567.5	-	567.5	1	
1,140	1,278	1,255	627.5	-	627.5	1	
1,240	1,378	1,355	677.5	-	677.5	1	
1,340	1,478	1,455	727.5	-	727.5	1	
1,440	1,578	1,555	777.5	520	515	2	
1,540	1,678	1,655	827.5	550	555	2	
1,640	1,778	1,755	877.5	585	585	2	
1,740	1,878	1,855	927.5	620	615	2	
1,840	1,978	1,955	977.5	650	655	2	
2,040	2,178	2,155	1,027.5	720	715	2	

MG: Machine guide \* Intermediate foot plate: One location when L ≥ 670 mm, two locations when L ≥ 1440 mm

- Notes
- The surface indicated by the ▲ marks is the installation surface.
  - Screws indicated in the diagram are supplied as standard accessories.
  - Movement outside the effective length (L) will damage the scale head. It is recommended that the mechanical movable length (stroke) be set to 10 mm or more to the inside of both ends of the effective length (L).

## Specifications

Model name	SR27A - xxx○□AX	SR27A - xxx○□BX SR27A - xxx○□DX	SR27A - xxx○□AZ
Effective length (L: mm)	70 - 2,040		
Thermal expansion coefficient	12±1 × 10 <sup>-6</sup> /°C		
Accuracy(at 20°C)	(3+3L/1,000) μmp-p or (5+5L/1,000) μmp-p, L: Effective length (mm)		
Reference point	Center, or user-selected position (Set at factory shipping)	Fixed to center	Fixed to 10 mm from left end of effective length
Output signal	Absolute serial bidirectional signal, compliant with EIA-485		Compliant with DRIVE-CLiQ
Compatible controllers	FANUC ai interface compatible	Mitsubishi Electric	SIEMENS AG
Resolution	Selectable from 0.01, 0.05, 0.1, 0.5 and 1 μm (Set at factory shipping)	Selectable from 0.01, 0.05 and 0.1 μm (Set at factory shipping)	0.01 μm
Maximum response speed	200 m/min		
Functional safety	Please consult with each controller manufacturer regarding support for functional safety.		EN ISO13849-1:2008 Cat.3 EN 62061:2005 / IEC 61508:2010 EN61800-5-2:2007
Legal compliance	FCC Part15 Subpart B Class A ICES-003 Class A Digital Device EN55011 Gp1 Class A, EN61000-6-2		
Operating temperature range	0 to +50°C		
Storage temperature range	-20 to +55°C		
Vibration resistance	150 m/s <sup>2</sup> (50 Hz to 3,000 Hz)		
Impact resistance	350 m/s <sup>2</sup> (11 ms)		
Protective design grade	IP54 (Air purge not included), IP65 (Air purge included)		
Power supply voltage range	DC+4.75 to +5.25 V		DC+17 to +30.8 V
Maximum power consumption	1.3W or less (4.75V or 5.25V)		1.75W or less (17V) 1.9W or less (30.8V)
Consumption current	250mA (5V) (when the controller is connected)		75mA (24V) (when the controller is connected)
Mass	Approx. 0.39kg + 1.53kg/m or less		
Compatible cables (types without relay connectors) Maximum cable length	CH23-***NVF 13 m	CH23-***NVM 13 m	CH22-***NSMY 30 m
Compatible cables (types with relay connectors) Maximum cable length	CH23-***NVK + CH23-***NPFA 30 m	CH23-***NVK + CH23-***NPMA 30 m	CH22-***NSMF + CH22-***NSFY 30 m

## Details of model designation

Scale  
SR27A - xxx○□△#

Scale: [xxx]Effective length (cm) [□]Resolution and direction (μm) [△]Communication protocol [＃]Reference point position

[○]Accuracy grade

Type	Accuracy grade
A	(5+5L/1,000) μmp-p
B	(3+3L/1,000) μmp-p
C	(3+3L/1,000) μmp-p
D	(3+3L/1,000) μmp-p
E	(3+3L/1,000) μmp-p

[□]Resolution and direction (μm)

Type	Direction	Resolution	Type	Direction	Resolution
A	F	0.01	F	-	0.01
B	G	0.05	G	-	0.05
C	H	0.1	H	-	0.1
D	J	0.5	J	-	0.5
E	K	1	K	-	1

[△]Communication protocol

Type	NC manufacturer	Remarks
A	FANUC	ai series
B	Mitsubishi Electric	2-wire
D	Mitsubishi Electric	4-wire
Z	SIEMENS AG	DRIVE-CLiQ

[＃]Reference point position

Type	Reference point position
X	Center
Y	Fixed to 10mm from left end of effective length

L: Effective length(mm)

SIEMENS AG: A only  
Mitsubishi Electric: A, B, C  
FANUC: A, B, C, D, E, F, G, H, J, K

## Cables

CH22 - □□□○▽※#

[□□□]Cable length  
Written by flush right, indication in "m" units, up to 30 m, 0.5 m pitch (Example)

Type	Cable length
015	1.5m
070	7m
260	26m

Type	Conduit specification
C	With conduit
N	Without conduit (standard)

[□□□]Cable length (Example)

Type	Cable length
010	1m
005	0.5m
065	6.5m
100	10m

Type	Cable specification
V	PVC (Φ6.8) [Scale side]
P	PVC (Φ8) [Controller side]
E	PU (Φ8) [Controller side]

[▽]Cable sheath (covering)

Type	Cable specification
S	PU (Polyurethane, Siemens Motion connect 800+)

[※]Scale side connector

Type	Specification	Remarks
M	Scale head connector	Standard
F	M12 connector (Female) made by Phoenix Contact	Relay/ Waterproofing
E	M12 connector (Female) with panel mount relay made by Phoenix Contact	Relay/ Waterproofing/ Attached connector

[#]Controller side connector

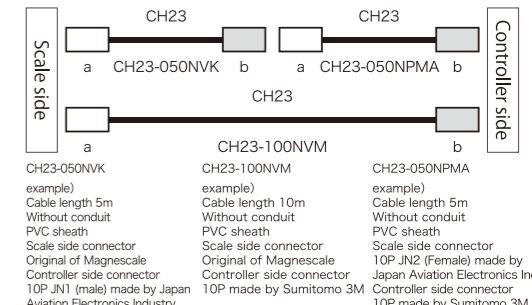
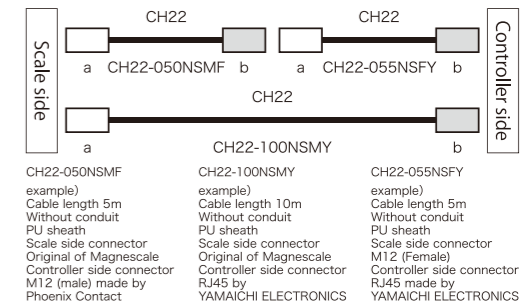
Type	Specification	Remarks
None	Open-end	Standard
Y	RJ45 connector made by YAMAICHI ELECTRONICS	Adopts NC machine tool
Z	RJ45 connector (water proof) made by YAMAICHI ELECTRONICS	Relay
F	M12 connector (Male) made by Phoenix Contact	Relay/ Waterproofing

[※]Controller side connector

Type	Specification	Remarks
Without	Earth wire	
Z	Open-end	Scale side connector should be 10P JN2 (Female) made by Japan Aviation Electronics Industry or 2P made by TAJIMI ELECTRONICS
None		Standard
M	10P made by Sumitomo 3M	Mitsubishi NC, J3 (INC serial, ABS)
F	20P straight case made by Honda Tsushin Kogyo	FANUC (INC serial, ABS)
J	Horizontal drawing case made by HIROSE Electric	FANUC (INC serial, ABS)
K	10P JN1 (Male) made by Japan Aviation Electronics Industry	Relay
N	12P R04 (Male) made by Japan Aviation Electronics Industry	Relay (fixed)

[#]Scale side connector

Type	Specification	Remarks
None	Original of Magnescale	Standard
A	10P JN2 (Female) made by Japan Aviation Electronics Industry	Relay
C	12P R04-9125JF8.5 made by TAJIMI ELECTRONICS	Relay (fixed)



SR27A

SR27A

SR27A

SR27A

SR27A

SR27A

SR27A

SR27A

SR27A