



Magnescale SR74 Incremental Linear Encoder Instructions

[Home](#) » [Magnescale](#) » Magnescale SR74 Incremental Linear Encoder Instructions 

Magnescale

Incremental linear encoder
Slim type
SR74
Encoder Instructions

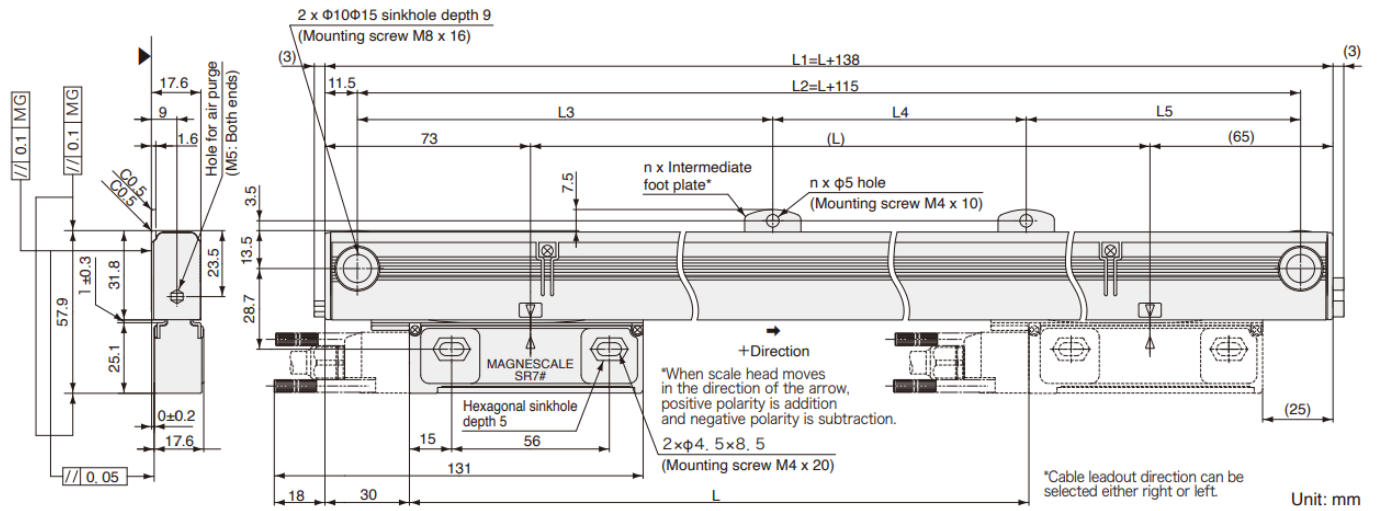


Contents

- [1 SR74 Incremental Linear Encoder](#)
- [2 Dimensions \(cable left-lead out direction\)](#)
- [3 Specifications](#)
- [4 Details of model designation](#)
- [5 Other Models](#)
- [6 Documents / Resources](#)
- [7 Related Posts](#)

SR74 Incremental Linear Encoder

- Slim type allows installation in narrow spaces



Effective length	Total length	Mounting pitch				Number of intermediate foot plates
L	L1	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
720	858	835	417.5	–	417.5	1

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	520	520	515	2
1,540	1,678	1,655	550	550	555	2
1,640	1,778	1,755	585	585	585	2
1,740	1,878	1,855	620	620	615	2
1,840	1,978	1,955	650	650	655	2
2,040	2,178	2,155	720	720	715	2

Unit: mm

MG: Machine guide * Intermediate foot plate: One location when L 720 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	SR74
Effective length (L: mm)	70-2,040
Thermal expansion coefficient	$12 \pm 1 \times 10^{-6} / ^\circ\text{C}$
Accuracy(at 20°C)	(3+3L/1,000) μ p-p or (5+5L/1,000) μ p-p L: Effective length (mm)
Reference point	Center point, Multi point (40 mm pitch), Signed-type (standard pitch 20 mm), User-selected point (1 mm pitch)
Output signal	A/B/Reference point line driver signal, compliant with EIA-422
Resolution	Selectable from 0.05, 0.1, 0.5, and 1 μ m (Set at factory shipping)
Maximum response speed	50m/ min (Resolution: 0.1 μ m, Minimum phase difference: at 50 ns)
Product Safety	FCC Part15 Subpart B Class A ICES-003 Class A Digital Device EN/B S 61000-6-2, EN/BS 61000-6-4
Product Environment	EN/BS 63000
Operating temperature range	0 to +50°C
Storage temperature range	-20 to +55°C
Vibration resistance	150 m/s ² (50 Hz to 3,000Hz)
Impact resistance	350 m/s ² (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

Maximum consumption current	1.0W or less (4.75V or 5.25V)
Consumption current	200mA (5V) (when the controller is connected)
Mass	Approx. 0.27kg+ 1.36kg/m or less
Standard compatible cable	CH33-***CP/CE
Maximum cable length	15 m

* Magnescale reserves the right to change product specifications without prior notice.

Details of model designation

Scale

SR74 – x x x ★ ○ □ ◆ ###

xxx Effective length (L): cm units

★ Cable lead-out direction

Type	Lead-out direction
R	Right
L	Left

○ Accuracy grade

Type	Accuracy grade
A 5	+5L/1,000 μmp-p
S 3	+3L/1,000 μmp-p

L: Effective length(mm)

□ Resolution and direction (μ)

Type	Direction	Resolution	Type	Direction	Resolution
B		0.05	G		0.05
C		0.1	H		0.1
D		0.5	J		0.5
E		1.0	K		1

◆ Minimum phase difference

Type	Phase difference (ns)	Type	Phase difference (ns)	Type	Phase difference (ns)
A	50	F	300	L	1,250
B	100	G	400	M	2,500
C	150	H	500	N	3,000
D	200	J	650		
E	250	K	1,000		

Reference point position
Distance from left end of effective length Unit mm

Reference point position	Indication method
Less than 1,000	Number (850 mm → 850)
1,000 1,099 mm	A + lower 2 digits 1,050 mm → A50
1,100 1,199 mm	B + lower 2 digits
1,200 1,299 mm	C + lower 2 digits
1,300 1,399 mm	D + lower 2 digits
1,400 1,499 mm	E+ lower 2 digits
1,500 1,599 mm	F + lower 2 digits
1,600 1,699 mm	G+ lower 2 digits
1,700 1,799 mm	H + lower 2 digits
1,800 1,899 mm	J + lower 2 digits
1,900 1,999 mm	K + lower 2 digits
2,000 2,040 mm	L+ lower 2 digits
Center	X
Multi	Y
Signed-type	Z

Cable

CH33 – □□○▽✱

□□ Cable length Written by flush right, indication in “m” units, up to 30 m, 1 m pitch (Example)

Type	Cable length
07	7m
26	26m

○ **Conduit**

Type	Conduit
C	With conduit (standard)
N	Without conduit

▽ Cable seath (covering)

Type	
P	PVC (Polyvinyl chloride)
E	PU (Polyurethane)

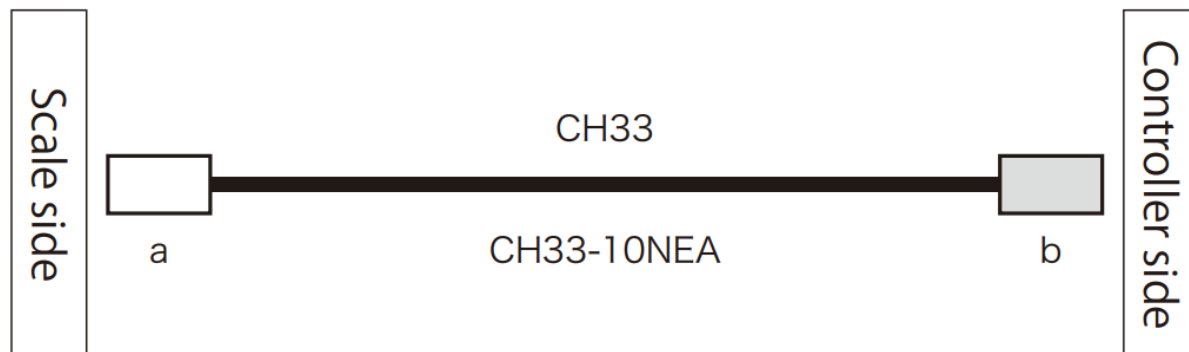
✳ **Controller side connector**

Type		Specification	Remarks
Without	With	Earth wire	
None	—	Open-end	Standard
A	—	D-sub 15P	
D	—	D-sub 9P	
L	—	10P made by Sumitomo 3M	Mitsubishi NC, J3 (A/B Phase)
E	P	20P straight case made by Honda Tsushin Kogyo	FANUC (A/B Phase)
H	R	Horizontal drawing case made by HIROSE Electric	FANUC (A/B Phase)

Scale side connector

Type	Specification	Remarks
None	Original of Magnescale	Standard

*Relay type cannot be used for A/B Phase type of SR74 and SR84



example
Cable length 10 Without conduit
PU sheath Scale side connector Original of Magnescale

Other Models

Absolute linear encoder slim type

SR77

FANUC

Mitsubishi Electric

Panasonic

Yaskawa Electric



Reference point position (Distance from left end of effective length)

Reference point position	Indication method	Reference point position	Indication method	Reference point position	Indication method
Less than 1,000	Number (850 mm→850)	1,700—1,799 mm	H + lower 2 digits	Center	X
1,000—1,099 mm	A + lower 2 digits (1,050 mm→A50)	1,800—1,899 mm	J + lower 2 digits		
1,100—1,199 mm	B + lower 2 digits	1,900—1,999 mm	K + lower 2 digits		
1,200—1,299 mm	C + lower 2 digits	2,000—2,040 mm	L + lower 2 digits		
1,300—1,399 mm	D + lower 2 digits				
1,400—1,499 mm	E + lower 2 digits				
1,500—1,599 mm	F + lower 2 digits				
1,600—1,699 mm	G + lower 2 digits				

SR77 - x x x ★ ○ △ ◆ □ □ □

Communication protocol

Type	NC manufacturer	Number of wires
A	FANUC α interface	4-wire
B	Mitsubishi Electric	2-wire
D	Mitsubishi Electric	4-wire
H	Panasonic	2-wire
F	Yaskawa Electric	2-wire

Resolution and direction

FANUC, Mitsubishi Electric, Panasonic

Type	Direction	Resolution	Type	Direction	Resolution
A	(plus)	0.01	F	(minus)	0.01
B		0.05	G		0.05
C		0.1	H		0.1
D		0.5	J		0.5
E		1	K		1

Yaskawa Electric

Type	Direction	Number of partitions
L	(plus)	1/8,192
M		1/1,024

Mitsubishi Electric is only A, B, C
Panasonic can be used with A~E*

*Contact our sales directly for detail model name

Accuracy grade

Type	Accuracy grade
A	(5+5L/1,000) μm
S	(3+3L/1,000) μm

L: Effective length(mm)

Cable lead-out direction

Type	Lead-out direction
R	Right
L	Left

Effective length (L): cm units

- Effective length 70,120,170,220,270,320,370,420,470,520, 570,620,720,770,820,920,1020,1140,1240, 1340,1440,1540,1640,1740,1840,2040 mm
- Maximum resolution 0.01μm
- Accuracy (3+3L/1,000) μmp-p L:mm (5+5L/1,000) μmp-p L:mm
- Maximum response speed 200m/min
- Protective design grade IP65

Cable:

CH33 (Mitsubishi Electric, Panasonic, Yaskawa Electric) CH33A (FANUC)

※ Please refer to page 29 for cable specifications.

Absolute linear encoder robust type

SR87

FANUC

Mitsubishi Electric

Panasonic

Yaskawa Electric



Reference point position (Distance from left end of effective length)

Reference point position	Indication method	Reference point position	Indication method	Reference point position	Indication method
Less than 1,000	Number (850 mm→850)	1,800—1,899 mm	J + lower 2 digits	2,700—2,799 mm	T + lower 2 digits
1,000—1,099 mm	A + lower 2 digits (1,050 mm→A50)	1,900—1,999 mm	K + lower 2 digits	2,800—2,899 mm	U + lower 2 digits
1,100—1,199 mm	B + lower 2 digits	2,000—2,049 mm	L + lower 2 digits	2,900—2,999 mm	V + lower 2 digits
1,200—1,299 mm	C + lower 2 digits	2,100—2,199 mm	M + lower 2 digits	3,000—3,049 mm	W + lower 2 digits
1,300—1,399 mm	D + lower 2 digits	2,200—2,299 mm	N + lower 2 digits	Center	X
1,400—1,499 mm	E + lower 2 digits	2,300—2,399 mm	P + lower 2 digits		
1,500—1,599 mm	F + lower 2 digits	2,400—2,499 mm	Q + lower 2 digits		
1,600—1,699 mm	G + lower 2 digits	2,500—2,599 mm	R + lower 2 digits		
1,700—1,799 mm	H + lower 2 digits	2,600—2,699 mm	S + lower 2 digits		

SR87 - x x x ★ ○ △ ◆ □ □ □

Communication protocol

Type	NC manufacturer	Number of wires
A	FANUC α interface	4-wire
B	Mitsubishi Electric	2-wire
D	Mitsubishi Electric	4-wire
H	Panasonic	2-wire
F	Yaskawa Electric	2-wire

Resolution and direction

FANUC, Mitsubishi Electric, Panasonic

Type	Direction	Resolution	Type	Direction	Resolution
A	(plus)	0.01	F	(minus)	0.01
B		0.05	G		0.05
C		0.1	H		0.1
D		0.5	J		0.5
E		1	K		1

Yaskawa Electric

Type	Direction	Number of partitions
L	(plus)	1/8,192
M		1/1,024

Mitsubishi Electric is only A, B, C
Panasonic can be used with A~E*

*Contact our sales directly for detail model name

Cable lead-out direction

Type	Lead-out direction
R	Right
L	Left

Accuracy grade

Type	Accuracy grade
A	(5+5L/1,000) μm
S	(3+3L/1,000) μm

L: Effective length(mm)

Effective length (L): cm units

- Effective length 140,240,340,440,540,640,740,840,940,1040, 1140,1240,1340,1440,1540,1640,1740,1840, 2040,2240,2440,2640,2840,3040 mm
- Maximum resolution 0.01μm
- Accuracy (3+3L/1,000) μmp-p L:mm (5+5L/1,000) μmp-p L:mm
- Maximum response speed 200m/min
- Protective design grade IP65

Cable:

CH33 (Mitsubishi Electric, Panasonic, Yaskawa Electric) CH33A (FANUC)

※ Please refer to page 29 for cable specifications.

Incremental linear encoder slim type

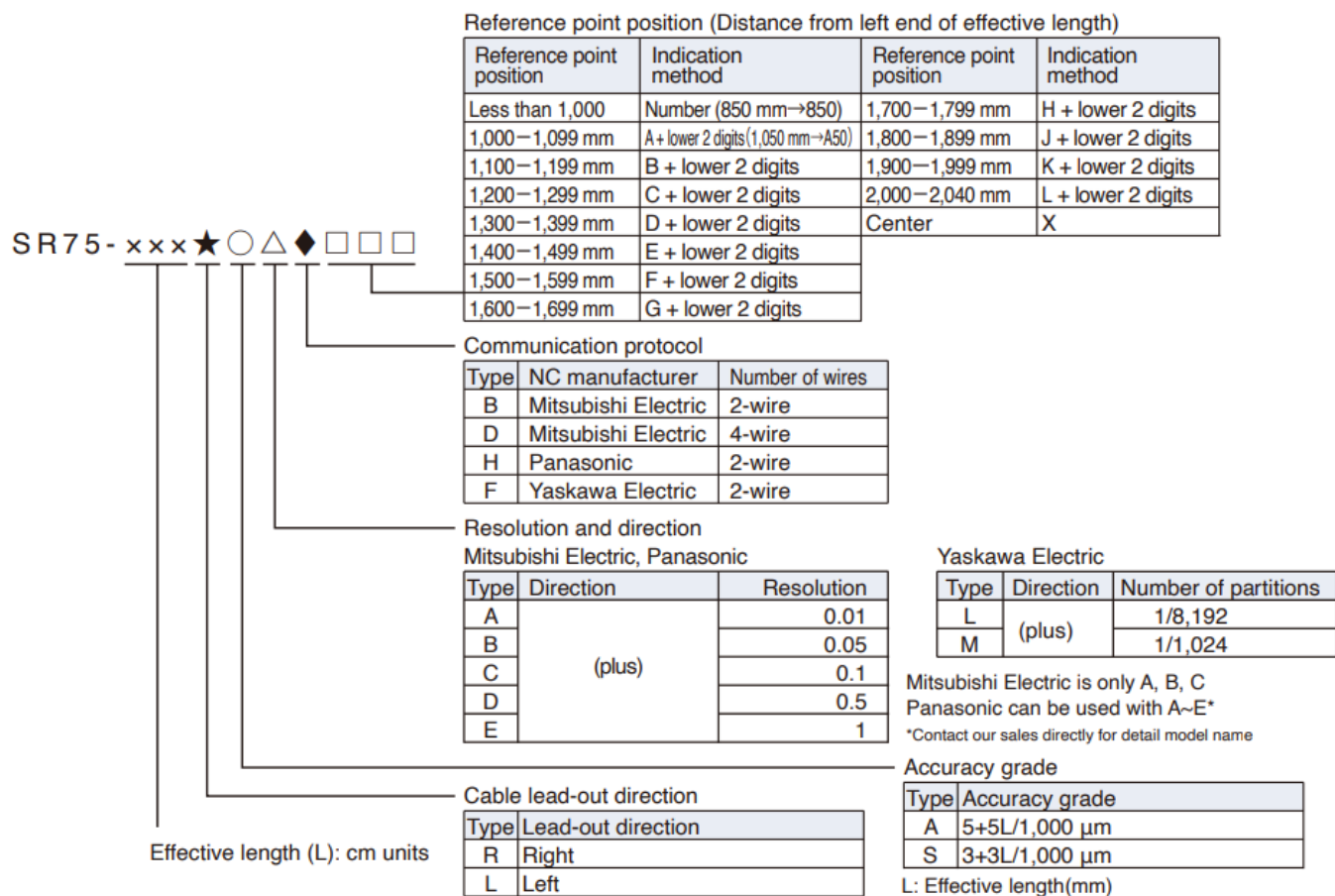
SR75

Mitsubishi Electric

Panasonic

Yaskawa Electric





- Effective length 70,120,170,220,270,320,370,420,470,520, 570,620,720,770,820,920,1020,1140,1240, 1340,1440,1540,1640,1740,1840,2040 mm
 - Maximum resolution 0.01μm
 - Accuracy (3+3L/1,000) μmp-p L:mm (5+5L/1,000) μmp-p L:mm
 - Maximum response speed 200m/min
 - Protective design grade IP65 Cable: CH33
- ※ Please refer to page 29 for cable specifications.

Incremental angle encoder enclosed type
RU74
A/B/Reference point



RU74 - 4096A

Minimum phase difference

Type	Minimum phase difference	Response revolutions (min.)		Type	Minimum phase difference	Response revolutions (min.)
		Approx.1°/1,000	Approx.1°/10,000			Approx.1°/1,000
A	50	2,000	267	E	250	533
B	100	1,332	133	F	300	444
C	150	888	89	G	400	333
D	200	666	67	H	500	266
				J	650	205
				K	1,000	133

Resolution, rotation direction and polarity

Type	Resolution	Rotation direction and polarity	Number of pulses/revolution
A	Approx. 1°/1,000	CW/ +	360,448
B	Approx.1°/1,000	CCW/ +	360,448
C	Approx.1°/10,000	CW/ +	3,600,384
D	Approx.1°/10,000	CCW/ +	3,600,384

- Hollow diameter $\varnothing 20$
- Resolution Approx.1/1,000° , Approx.1/10,000°
- Accuracy: $\pm 2.5''$
- Maximum response revolution As the table on the right
- Protective design grade IP65

Cable

CE28 - * * * #

Controller side connector

Conduit

Type	Conduit
C	With conduit
N	Without conduit

Cable length

Written by flush right, indication in “10 cm” units, up to 14 m, 1 m pitch
Note: 15 m or less including RU74 main unit head cable length

Documents / Resources



[Magnescale SR74 Incremental Linear Encoder](#) [pdf] Instructions

SR74 Incremental Linear Encoder, SR74, Incremental Linear Encoder, Linear Encoder, Encoder