

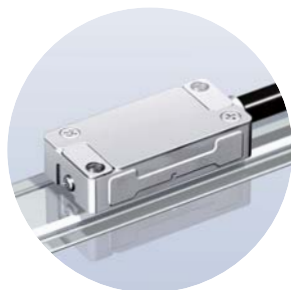
# Magnescale

SPEED X PRECISION

Maximum response speed 3m/s  
Maximum resolution 50nm and  
 $\pm 5\mu\text{m}$  accuracy



## Incremental type SmartSCALE



Separate type  
simple architecture  
IP65 protection against  
dust and water



Space-saving small head  
W33xD16xH8[mm](Actual size)



Easy to check signal  
with LED display

Magnescale Co., Ltd.

## Specifications

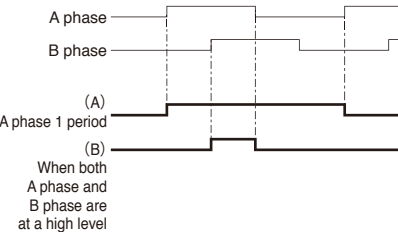
Model name	SQ10 scale unit	PQ10 head unit	MQ10 interpolator unit
		PQ11 head unit with interpolator	
Effective length	100~1,000 mm		
Accuracy (at 20°C)	±5μm		
Resolution	0.05/0.1/0.5/1μm/0.048828μm (Only Yaskawa Electric Serial interface)		
Maximum response speed	Serial interface	3m/s	
	A/B phase output	Minimum phase difference(ns)	
		[m/min]	50 100 150 200 250 300 400 500 650 1,000 1,250 2,500 3,000
Resolution(μm)	0.05 36 18 12 9 7 6 4.5 3.6 2.7 1.6 1.3 0.6 0.4		
	0.1 72 36 24 18 14 12 9 7 6 3.6 2.8 1.4 0.9		
	0.5 180 180 150 114 90 72 54 42 3 19 15 7 6		
	1.0 180 180 180 180 180 156 120 96 72 48 36 18 12		
Operating temperature	0 to 50°C		
Vibration resistance	196m/s <sup>2</sup> (50Hz - 2000Hz)(Head only)		
Impact resistance	980m/s <sup>2</sup> (11ms)(Head and Scale)		
Protective design grade	IP67	IP65/IP60	IP60
Power supply voltage range	-	DC5V±5%	
Maximum consumption current	-	250mA	
Mass	(Effective length: mm×0.22)+8g	8g (excludes cable)	120g (excludes cable)
Output signal	Various serial interface or A/B phase output		

### LED display



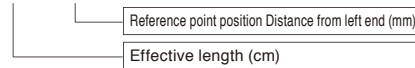
Items	color	Lighting conditions
ORIGIN	Orange	When passing reference point
ALARM	Red	When an alarm occurs
HIGH	Yellow	Excessive level
FINE	Green	Appropriate level
LOW	Orange	Shortage level

### A/B phase output Reference point output format



### Model name :

SQ10-A xxx □□□□ A(scale unit)



### PQ10-xx ☆ A (head unit)

A: IP60, B: IP65	
Type	Cable length
07	700mm
17	1,700mm
27	2,700mm
32	3,200mm
37	3,700mm

### MQ10-△ □ A ◆ ○ (interpolator unit)

Type	Reference point output format
A	A phase 1 period
B	When both A phase and B phase are at a high level
Minimum phase difference See Table 1	
Resolution A:0.05, B:0.1, C:0.5, D:1μm L:0.048828μm (Only Yaskawa Electric)	
Communication protocol See Table 2	

### PQ11-xx △ □ ☆ ◆ ○ (head unit with interpolator)

Reference point output format(Only A/B phase)	
Minimum phase difference See Table 1	
A: IP60, B: IP65	
Resolution A:0.05, B:0.1, C:0.5, D:1μm L:0.048828μm (Only Yaskawa Electric)	
Communication protocol See Table 2	
Type	Cable length
10	1,000mm
20	2,000mm
30	3,000mm
40	4,000mm

Table 1: Minimum phase difference (ns)

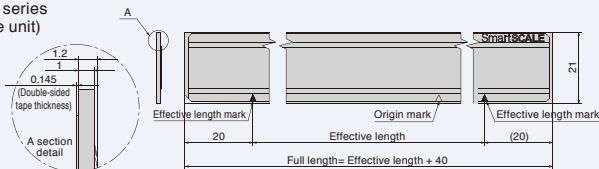
Model name	Phase difference
A	50
B	100
C	150
D	200
E	250
F	300
G	400
H	500
J	650
K	1000
L	1250
M	2500
N	3000

Table 2 : Communication protocol

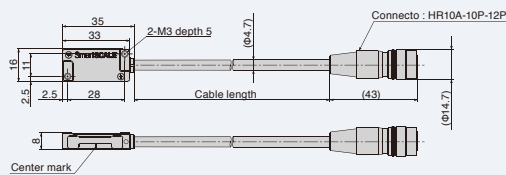
Model name	Communication protocol
B	Mitsubishi Electric/ 2-wire
D	Mitsubishi Electric/ 4-wire
F	Yaskawa Electric/ Without hall sensor
G	Yaskawa Electric/ With hall sensor
H	Panasonic
P	A/B phase output
M	Magnescale protocol

## Dimensions

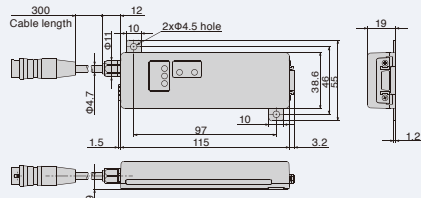
### SQ10 series (Scale unit)



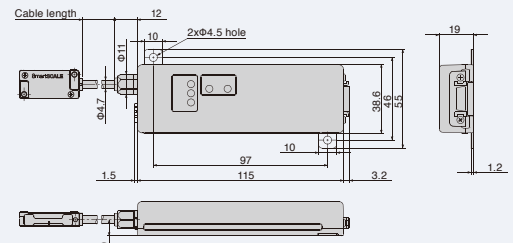
### PQ10 series (Head unit)



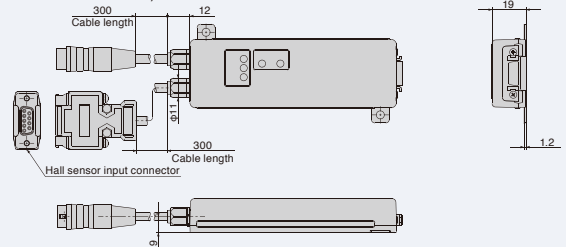
### MQ10 series (Interpolator unit)



### PQ11 series (Head unit with interpolator)



### MQ10-GLA (Yaskawa Electric/With hall sensor)



△ To use this product safely, please read the instruction manual carefully and thoroughly prior to usage. •Magnescale reserves the right to change products and specifications without prior notice.

## Magnescale Co., Ltd.

International Sales Department : 3-1-4 Edagawa, Koto-ku, Tokyo 135-0051, Japan TEL. +81(0)3-6632-7924 FAX. +81(0)3-6632-7928  
 Magnescale Americas Inc. : 1 Technology Drive, Suite F217, Irvine, CA 92618, USA TEL. +1(949)727-4017 FAX. +1(949)727-4047  
 Magnescale Europe GmbH : Antoniusstrasse 14, 73249 Wernau, Germany TEL. +49(0)7153-934-291 FAX. +49(0)7153-934-299  
 Service & Parts : 45 Suzukawa, Isehara-shi, Kanagawa 259-1146, Japan TEL. +81(0)463-92-2132 FAX. +81(0)463-92-3090