Rotary Encoders

The passion of people for the future

www.kwangwo.co.kr

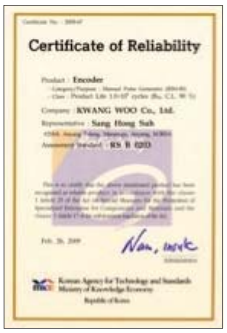
KWANGWOO

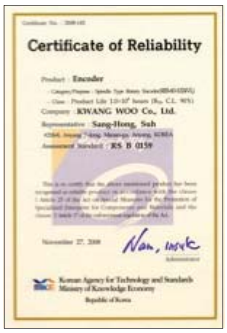
KWANGWOO.CO.,LTD.

INTRODUCTION

1992 11	Establishment of KWANGWOO CO., LTD
12	Development of 5 models of Encoder for NC machine
1993 07	Started mass production of Encoder
1995 11	Nominated for Encoder development work of Korean CNC development project
1998 05	Acquired CE certification for all Encoders
1999 01	Started business relationship with Doosan infracore
2002 11	Gained ISO9001 Certification
2004 04	Designated as a CLEAN business site
2006 05	Register Research Institute in Korea Industrial Technology Association
2008 11	Acquired "R"(Reliability) Mark – Position coder, M.P.G
2011 05	Nominated for encoder development work for Defense Agency for Technology and Quality
05	Joined Seoul National Defense Venture Centure

CERTIFICATION



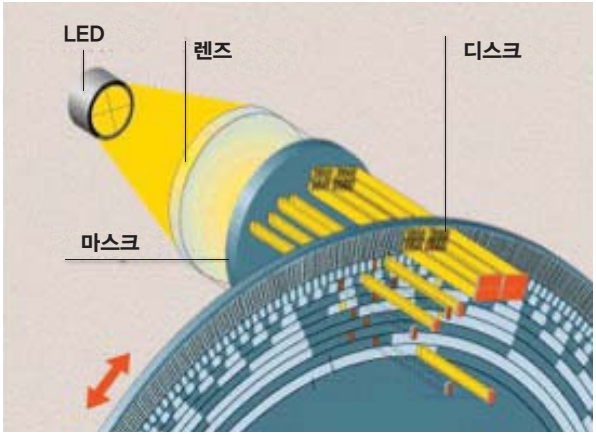


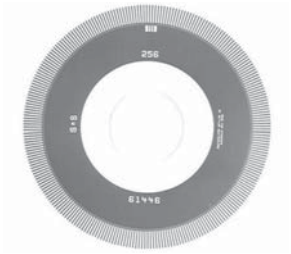
Encoder / Structure / Ordering Code

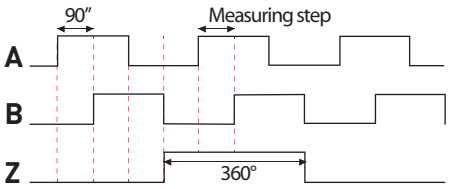
Encoder

Rotary Encoder is a sensor that converts mechanical movement into electrical signal (pulse)

Structure







▶ Signal in CW on the view from the mounting

Ordering Code

Incremental

R	I	□	–	□ □	–	□ □ □ □	□	□	□
Series	Code	Shaft type		Out Diameter		Resolution	Output Signal	Output Circuit	Customized Spec

Shaft type

A	Hollow shaft
B	Solid shaft
M	Manual Pulse Generator

Out Diameter

20:20~29mm	30:30~39mm
40:40~49mm	50:50~59mm
60:60~69mm	70:70~79mm
80:80~89mm	90:90~99mm

Resolution

2	20
50	60
100	120
160	200
256	300
360	400
500	512
600	1000
1024	2000
2048	2500

Output Signal

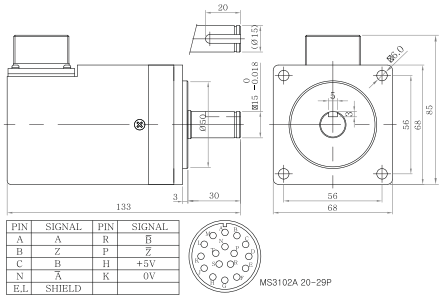
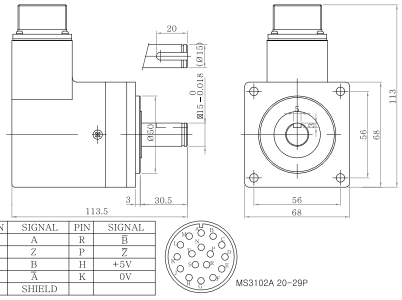
A	A
B	A, B
Z	A, B, Z
U	A, $\bar{A}$, B, $\bar{B}$
V	A, $\bar{A}$, B, $\bar{B}$, Z, $\bar{Z}$

Output Circuit

L	Line driver
O	Open collector
V	Voltage
C	Complementary
T	Totempole

For CNC Machine (TC / MCT)

Position coder

Model	RIB-60-1024VLG-A / VLI	RIB-60-1024VLF-A
Style		
Outer Dimension		

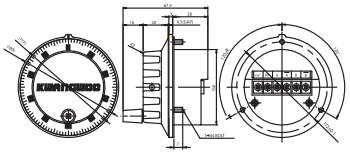
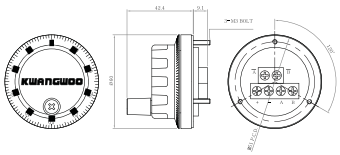
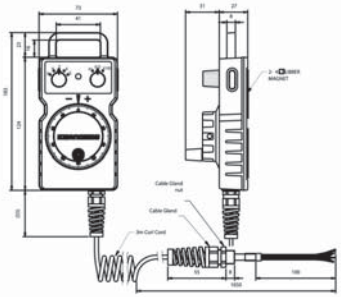
PIN	SIGNAL	PIN	SIGNAL
A	A	R	$\overline{B}$
B	Z	P	$\overline{Z}$
C	B	H	+5V
N	$\overline{A}$	K	0V
E.L	SHIELD		

PIN	SIGNAL	PIN	SIGNAL
A	A	R	$\overline{B}$
B	Z	P	$\overline{Z}$
C	B	H	+5V
N	$\overline{A}$	K	0V
E	SHIELD		

Electrical Spec.		
Resolution	1024P/R	1024P/R
Output Circuit	Line driver	Line driver
Supply Voltage	DC+5V	DC+5V
Current Consumption	150mA Max.	150mA Max.
Response Frequency	136kHz Max.	204kHz Max.
Rising / Falling Time	0.2㎲	0.2㎲
Mechanical Spec.		
Max Rotating Speed	8,000rpm	12,000rpm
Starting Torque	400gf.㎝ Max.	800gf.㎝ Max.
Moment of Inertia	250gf.㎠ Max.	250gf.㎠ Max.
Allowable Shaft Load	Radial-5kg Max. Axial-5kg Max.	Radial-5kg Max. Axial-5kg Max.
Vibration Resistance	10~55Hz / 1.5㎜	10~55Hz / 1.5㎜
Shock Resistiance	50G / 11m sec.	50G / 11m sec.
Operating Temp.Range	-10C~+ 80C	-10C~+ 80C
Storage Temp.Range	-20C~+90C	-20C~+90C
Protection	IP50	IP65

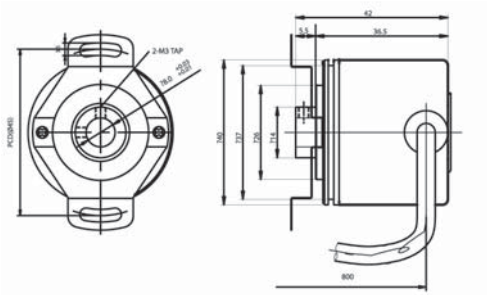
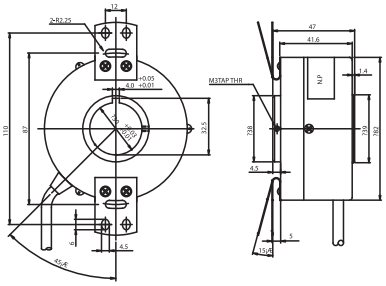
Example

MPG

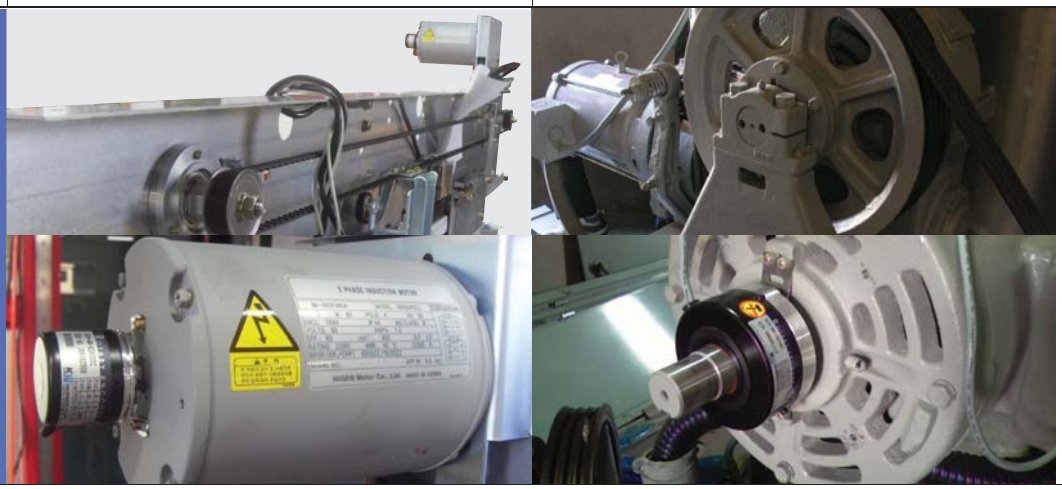
Model	RIM-80-0100BV/UL	RIM-60-0100BV/UL	APMA-RIM60-0100BV
Style			
Outer Dimension			
Electrical Spec.			
Resolution	100P/R	100P/R	100P/R
Output Circuit	Voltage, Open Collector / Line driver	Voltage / Line driver	Voltage
Supply Voltage	DC+5V,12~24V / DC+5V	DC+5V,24V / DC+5V	DC+5V
Current Consumption	60mA Max.	60mA Max.	150mA Max.
Response Frequency	5kHz Max.	5kHz Max.	136kHz Max.
Mechanical Spec.			
Max Rotating Speed	600rpm	600rpm	600rpm
Starting Torque	300gf.㎝ Max.	200gf.㎝ Max.	200gf.cm Max.
Allowable Shaft Load	Radial - 1kg Max. Axial - 2kg Max.	Radial - 1kg Max. Axial - 2kg Max.	Radial - 1kg Max. Axial - 2kg Max.
Vibration Resistance	10~55Hz / 1.5㎜	10~55Hz / 1.5㎜	10~55Hz / 1.5mm
Shock Resistiance	50G / 11m sec.	50G / 11m sec.	50G / 11m sec.
Operating Temp.Range	-10C~+70C	-10C~+70C	-10C~+70C
Storage Temp.Range	-20C~+80C	-20C~+80C	-20C~+80C
Protection	IP50	IP50	IP65
Rotary Switch			Contact Rating : 0.4VA Max.Voltage : 20V
EMG Switch			Contact point : 2C
Push Botton			Contact point : 2B Max.Voltage : 250VAC

Example

For Elevator (Door / T.M)

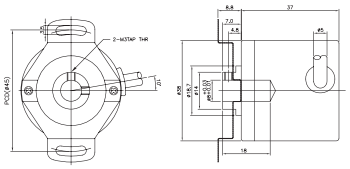
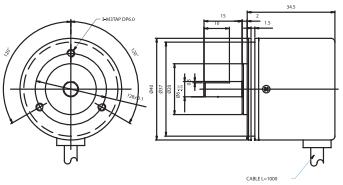
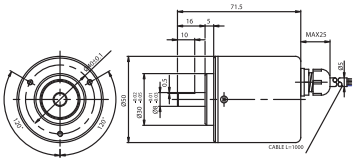
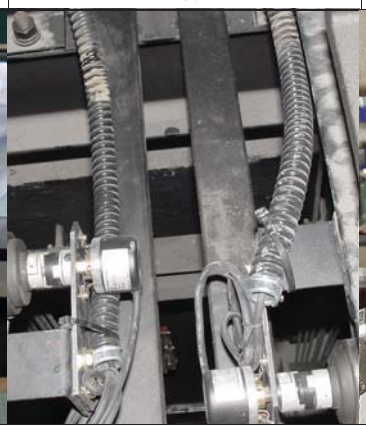
Model	RIA-40-XXXX-BO/UL	RIA-80-1024BC
Style		
Outer Dimension		
Electrical Spec.		
Resolution	256 / 500 / 1000 / 2500P/R	1024P/R
Output Circuit	Open Colletor / Line driver	Complementary
Supply Voltage	DC+5V~28V	DC+5V~28V
Current Consumption	150mA Max.	150mA Max.
Response Frequency	200kHz Max.	200kHz Max.
Rising / Falling Time	0.2μs	0.2μs
Mechanical Spec.		
Max Rotating Speed	7,000rpm	6,000rpm
Starting Torque	200gf.㎝ Max.	300gf.㎝ Max.
Moment of Inertia	250gf.㎠ Max.	250gf.㎠ Max.
Allowable Shaft Load	Radial-5kg Max. Axial-5kg Max.	Radial-5kg Max. Axial-5kg Max.
Vibration Resistance	10~55Hz / 1.5㎜	10~55Hz / 1.5㎜
Shock Resistiance	50G / 11m sec.	50G / 11m sec.
Operating Temp.Range	-10C~+70C	-10C~+70C
Storage Temp.Range	-20C~+80C	-20C~+80C
Protection	IP50	IP50

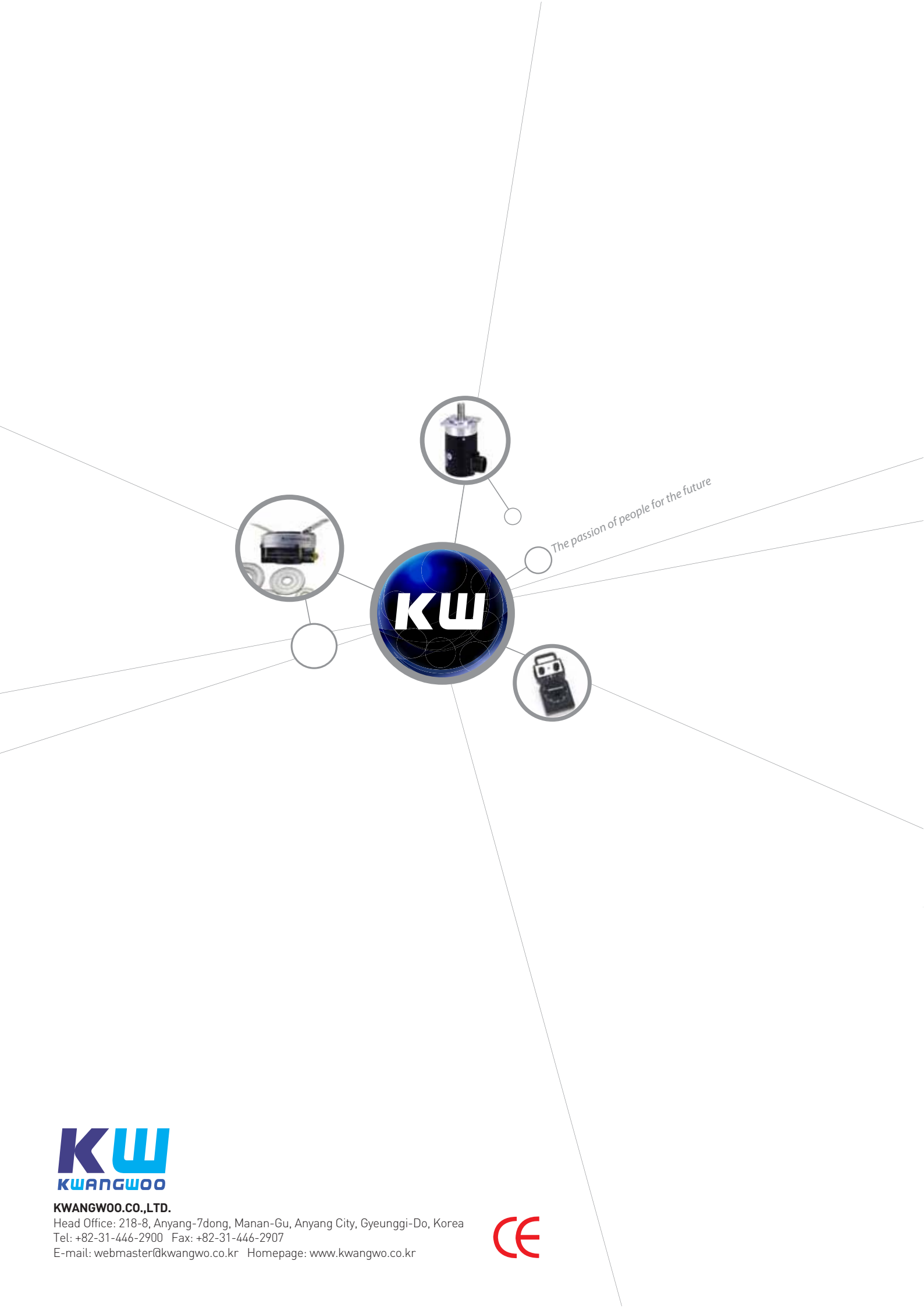
Example



For Embroidery Machine

For Industrial use

Model	RIA-38-1000-ZO/ZV	RIB-40 Series	RIB-50 Series
Style			
Outer Dimension			
Electrical Spec.			
Resolution	1000P/R (Z=15T / 20T)	2, 20, 50, 60, 100, 120, 160, 200, 250, 256, 300, 360, 500, 512, 600, 1000, 1024, 2000, 2048, 2500P/R	
Output Circuit	Voltage / Open Colletor	Voltage, Open collector, Totemple, Line driver	
Supply Voltage	DC+5V~28V	DC+5V~28V / DC+5V (Line driver)	
Current Consumption	150mA Max.	150mA Max.	
Response Frequency	200kHz Max.	200kHz Max.	
Rising / Falling Time	0.2㎲	0.2㎲	
Mechanical Spec.			
Max Rotating Speed	7,000rpm	6,000rpm	
Starting Torque	200gf.㎝ Max.	300gf.㎝ Max.	
Moment of Inertia	250gf.㎠ Max.	200gf.㎠ Max.	
Allowable Shaft Load	Radial-5kg Max. Axial-5kg Max.	Radial-5kg Max. Axial-5kg Max.	
Vibration Resistance	10~55Hz / 1.5㎜	10~55Hz / 1.5㎜	
Shock Resistiance	50G / 11m sec.	50G / 11m sec.	
Operating Temp.Range	-10C~+70C	-10C~+70C	
Storage Temp.Range	-20C~+80C	-20C~+80C	
Protection	IP50	IP50	IP64
Example			



KWANGWOO.CO.,LTD.
Head Office: 218-8, Anyang-7dong, Manan-Gu, Anyang City, Gyeunggi-Do, Korea
Tel: +82-31-446-2900 Fax: +82-31-446-2907
E-mail: webmaster@kwangwo.co.kr Homepage: www.kwangwo.co.kr

Light Source

The passion of people for the future

www.kwangwo.co.kr

KWANGWOO

KWANGWOO.CO.,LTD.

INTRODUCTION

1992 11	Establishment of KWANGWOO CO., LTD
1993 11	Start production of light sources for Industrial use and light guides
1995 06	Distributorship Agreement with Mitsubishi Rayon In Japan
1998 01	Distribution Agreement with Fiberstarts in USA (Fiber optic lighting)
1999 09	Start mass production of a metal halide type light source (model : KLS-150M)
2002 11	Gained ISO9001 Certification
2006 05	Register Research Institute in Korea Industrial Technology Association
2007 08	Acquire single PPM Certification
2009 12	Awarded the bronze price on Halogen lamp Feedback Light Source In Korea Invention and Patent Ceremony
2010 12	Development of 4 models of LED Light sources (KLS-018L, KLS-050L, KLS-050T, KLS-080T)

CERTIFICATION

SGS

Date Issued: October 24, 2011

CERTIFICATE No.: F690501/SP-SAF001065

CERTIFICATE OF LVD COMPLIANCE

Product submitted ..... : LED Light Source
Model KLS-050T, KLS-050L
Rated Input 100-240 V~, 50/60Hz; 1,5 A; 90 W; Class I

Applicant(Manufacturer) ..... : KWANGWOO CO., LTD.
218-8, Anyang-Dong, Manan-Gu, Anyang-City, Kyunggi-Do, Korea

Testing Laboratory ..... : SGS Korea Co., Ltd. (Gunpo Laboratory)

Test Report Number(s) ..... : F690501/RF-SAF004621

Order Number(s) ..... : G-44-2011-02260

Specification Requested ..... : EN 61010-1:2001

Conclusion
Based on a review of the test report, this apparatus meets the requirements of the above standards and hence fulfils the requirements of Directive 2006/95/EC

This certificate is only valid for the equipment submitted and configuration described, in conjunction with the test data detailed above. It does not permit the use of the SGS PRODUCT CERTIFICATION MARK.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives.

CE

WonWoo Lee
Manager

Eric Lee
General Manager

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SGS KOREA CO., LTD. | #19-34, Sorbon-dong, Gunpo-si, Gyeonggi-do, 435-041 Korea
T +82 (0)31 428 5700 F +82 (0)31 427 2379 Web site : www.ee.sgs.com/korea

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09752599

SGS

Date Issued: September 16, 2011

CERTIFICATE No.: F690501/SP-EMH000038

CERTIFICATE OF EMC COMPLIANCE

Order No. G-44-2011-02260
Product submitted ..... LED Light Source
KLS-050T (Alt. KLS-050L)

Applicant ..... KWANGWOO Co., Ltd.
218-8, Anyang-dong, Manan-gu, Anyang-si, Gyeonggi-do, Korea

Manufacturer ..... KWANGWOO Co., Ltd.
218-8, Anyang-dong, Manan-gu, Anyang-si, Gyeonggi-do, Korea

Testing Laboratory ..... SGS Korea Co., Ltd.

Test Report Number(s) F690501/RF-EMH000132
Date of Receipt ..... August 18, 2011
Date of Test ..... August 23, 2011 – August 29, 2011
Specification Requested ..... EN 61000-6-2:2005, EN 61000-6-4:2007

Conclusion
The apparatus meets the requirements of the above standards and hence fulfils the requirements of Directive 2004/108/EC.

This certificate is only valid for the equipment and configuration described, in conjunction with the test data detailed above. It does not permit the use of the SGS PRODUCT CERTIFICATION MARK.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives.

CE

WonWoo Lee
Manager

Eric Lee
General Manager

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SGS KOREA CO., LTD. | #19-34, Sorbon-dong, Gunpo-si, Kyonggi-do, Korea 435-041
t +82 (0)31 428 5765 f +82 (0) 31 427 2379 Web site : www.ee.sgs.com/korea

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F690501

SGSPAPER
09752739

New product!

KLS-130T-RC

R,G,B,W Full color
Replace 250W Metal halide light source

Features

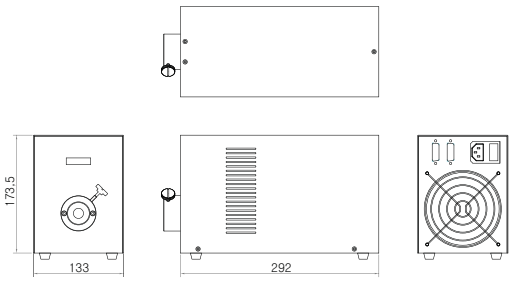
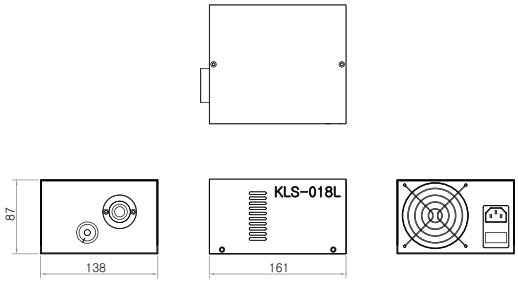
- Display function
- Possible is simultaneous control up to 512 units by communication.
- Wide illumination control range (Max. 4096 step)
- Overheating protection circuit
- High power LED applied (Long lamp lifetime)
- Possible is setting of using illuminance.
- Constant illuminance control function
- Strobe function
- Feedback function for stable brightness control

KLS-130T-RC

Dimension	210mm(W) x 390mm(D) x 180mm(H)
Weight	Over 5kg
Power Consumption	Max 188W, Normal 150W
Supply Voltage	AC 100~240V ±10%, 50/60Hz
Input Protection	by Fuse 250V/2A [Ø5 x 20mm]
Operating Circumstance	0℃ ~ 40℃, 10% ~ 80%
Storage Circumstance	-20℃ ~ 60℃, 5% ~ 90%
Illumination Control Range	256, 512, 1024(default), 2048, 4096 step
Illumination Control Method	Remote : by 8 bit Digital (256 step), by 0~5V analog by Serial Communication (RS-232C/RS422)

Brightness	over 1,000,000 Lux (Natural White : RGBW Mixing)
Light Output Ferrule	Over 18mm (Inner)
Error Detection	FAN & LED failure, Temperature
Cooling Method	FAN Forced Air Cooling
Luminous Color	Full color
Color Temperature	6,500°K ± 500°K (White Color)
Lamp Lifetime	30,000Hr

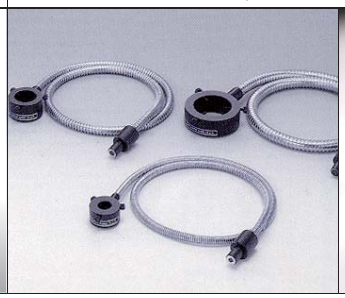
LED Light Source

Model	KLS-080T-RE	KLS-018L-LS
Style		
Outer Dimension		
Features	• Display function • Possible is simultaneous control up to 29 units by communication. • Wide illumination control range (Max. 3072 step) • Overheating protection circuit • High power LED applied (Long lamp lifetime) • Compared to 150W Halogen Light Source, 300% higher illuminace • Possible is setting of using illuminance. • Constant illuminance control function • Strobe function	• Slim size • Dimming by a manual volume • Overheating protection circuit • High power LED applied (Long lamp lifetime) • Compared to 100W Halogen Light Source, equal illuminace

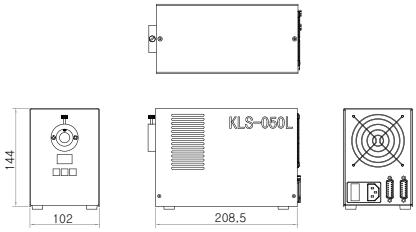
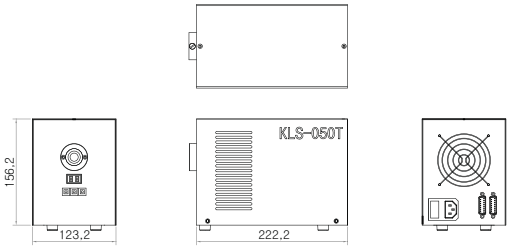
Specification

Dimension	131㎜(W) x 291㎜(D) x 174㎜(H)	138㎜(W) x 161㎜(D) x 87㎜(H)
Weight	5 kg	1.5 kg
Power Consumption	Max. 140W, Normal 100W	Max. 30W, Normal 18W
Supply Voltage	AC 100~240V ±10%, 50/60Hz	AC 100~240V ±10%, 50/60Hz
Input Power Protection	by Fuse 250V/2A [¨ª5 x 20㎜]	by Fuse 250V/2A [Ø5 x 20㎜]
Operating Circumstance	0℃ ~ 40℃, 10% ~ 80%	0℃ ~ 40℃, 10% ~ 80%
Storage Circumstance	-20℃ ~ 60℃, 5% ~ 90%	-20℃ ~ 60℃, 5%~ 90%
Illumination Control Range	256, 512, 1024(default), 2048, 3072 step	-
Illumination Control Method, ON/OFF control	Manual : by Key Remote : by 8 bit Digital (256 step), by 0~5V analog by Serial Communication (RS-232C/RS422)	by Manual Volume
Constant Illuminance Control	Internal Feedback / External Feedback	by Power Switch
Brightness	over 830,000 Lux (White Color)	over 140,000 Lux (White Color)
Light Output Ferrule	15㎜/18㎜(Inner)	15㎜/18㎜ (Inner)
Error Detection	FAN & LED failure, Temperature	Temperature
Cooling Method	FAN Forced Air Cooling	FAN Forced Air Cooling
Luminous Color	White/Red/Green/Blue	White/Warm White
Color Temperature	6,500°K ± 500°K (White Color)	6,500°K /3000°K ± 500°K
Lamp Lifetime	30,000Hr	30,000Hr

Application



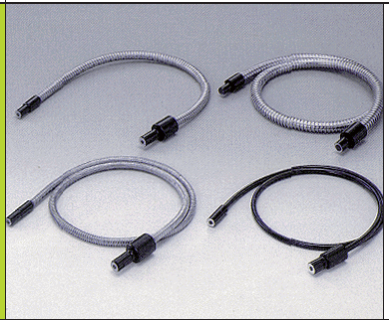
LED Light Source

Model	KLS-050L-RD	KLS-050T-RD
Style		
Outer Dimension		
Features	• Display function • Possible is simultaneous control up to 29 units by communication. • Wide illumination control range (999 step) • Overheating protection circuit • High power LED applied (Long lamp lifetime) • Possible is setting of using illuminance. • Strobe function • Compared to 150W Halogen Light Source, 50% higher illuminace (KLS-050L) • Compared to 150W Halogen Light Source, 200% higher illuminace (KLS-050T)	

Specification

Dimension	100㎜(W) x 210㎜(D) x 142㎜(H)	120㎜(W) x 220㎜(D) x 155㎜(H)
Weight	2 kg	2.5 kg
Power Consumption	Max. 90W, Normal 50W	Max. 90W, Normal 50W
Supply Voltage	AC 100~240V ±10%, 50/60Hz	AC 100~240V ±10%, 50/60Hz
Input Power Protection	by Fuse 250V/2A [Ø5 x 20㎜]	by Fuse 250V/2A [¨ª5 x 20㎜]
Operating Circumstance	0℃ ~ 40℃, 10% ~ 80%	0℃ ~ 40℃, 10% ~ 80%
Storage Circumstance	-20℃ ~ 60℃, 5% ~ 90%	-20℃ ~ 60℃, 5% ~ 90%
Illumination Control Range	1~999 step	1~999 step
Illumination Control Method, ON/OFF control	Manual : by Key	Manual : by Key
	Remote : by 8 bit Digital (256 step), by Serial Communication (RS-232C/RS422)	Remote : by 8 bit Digital (256 step), by Serial Communication (RS-232C/RS422)
Brightness	over 350,000 Lux (White Color)	over 600,000 Lux (White Color)
Light Output Ferrule	15㎜/18㎜ (Inner)	15㎜/18㎜ (Inner)
Error Detection	FAN & LED failure, Temperature	FAN & LED failure, Temperature
Cooling Method	FAN Forced Air Cooling	FAN Forced Air Cooling
Luminous Color	White/Red/Green/Blue	White/Red/Green/Blue
Color Temperature	6,500°K ± 500°K (White Color)	6,500°K ± 500°K (White Color)
Lamp Lifetime	30,000Hr	30,000Hr

Application



Metal Halide Light Source

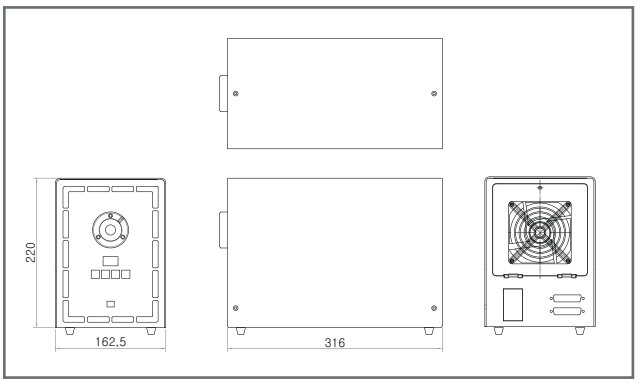
250W (METAL HALIDE)

Features

- 250W metal halide lamp source
- Dimming Filter (128 Step)
- Color Filter (8 Step)
- RS232/RS422 control, 8 bit Digital (256 steps) *Option
- Display
- Adjustable Motor RPM (15~35 RPM)
- Self-TEST
- Overheating protection circuit

KLS - □M - RC - □OW

TYPE	Inside Dia. of connector
250 : 250W	15 : Ø15



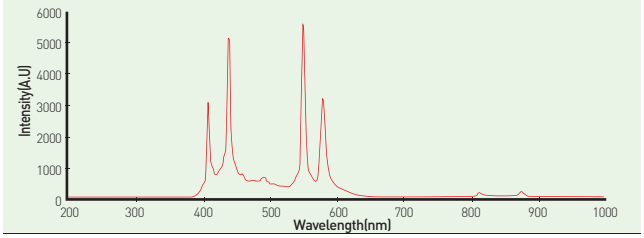
Light Source

Model	KLS-250M-RC-150
Power Type	Electronic Ballast, S.M.P.S
Dimension	234(㎜)H x 160(㎜)W x 326(㎜)L
Weight	6kg
Power Consumption	360(Watts) Max.
Supply Voltage	220V, 0/60(Hz) ±10%
Fuse	220V/5A (Ø5 x 20)
Fan Type	□ 80 x 25, DC12V 0.30A
Operating Temperature	0℃ to 40℃
Storage Temperature	-20℃ to 60℃
Relative Humidity	90% Max
Color Filter	8 Step
Dimming Filter	128 Step
Communication	RS232 / RS422 (29 Address), 8 bit Digital (256 steps) *Option

Lamp

Model	SH-MA 250/DC-MH
Type	Metal halide lamp with reflector
Power	250(Watts)
Average Lamp Life	2,000 Hours
Lamp Voltage	DC 150V(MAX)
Ignition Voltage	Pulse 24 KV
Color Temperature	7,500K

Spectrum



Halogen Light Source

100W(150W)

Features

- Manual control only
- Standard light source
- Overheating protection circuit
- S.M.P.S
- Dimming by volume
- Heat resistant by improvement of heat emitting structure (Patent applied for)

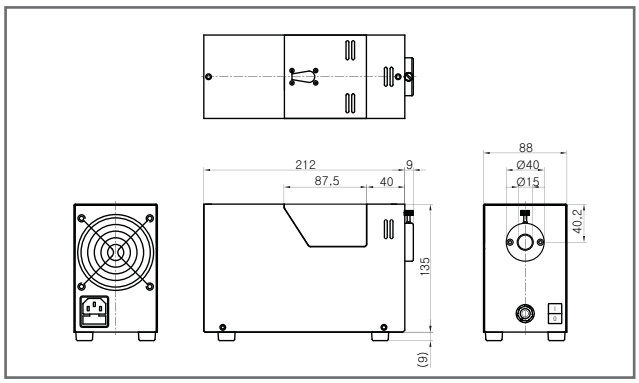
Application

- Light guide in fiber optic lighting
- Macro & Microscope system
- Machine vision
- Inspection system

KLS - □H - LS - □OP(D)

TYPE
150 : 150W
100 : 100W

Inside Dia. of connector
15 : Ø15
18 : Ø18



Light Source

Model	KLS-100H-LS-150P	KLS-150H-LS-150D
Power Type	S.M.P.S	
Dimension	135(㎜)H x 88(㎜)W x 212(㎜)L	
Weight	2kg	
Power Consumption	136(Watts) Max.	200(Watts) Max.
Supply Voltage	220V, 50/60(Hz) ±10%	
Fuse	250V/5A (Ø5 x 20)	
Fan Type	□ 80 x 25, DC12V 0.30A	
Operating Temperature	0℃ to 40℃	
Storage Temperature	-20℃ to 60℃	
Relative Humidity	90% Max	

Lamp

Model	JCR(PHILIPS)	DDL(GE)
Type	Tungsten halogen lamp with reflector	
Power	100 (Watts)	150 (Watts)
Average Lamp Life	1,500 Hours average	500 Hours average
Lamp Voltage	11.5 (Volt)	19.5 (Volt)
Color Temperature	3,100(°K)	3,200(°K)

The passion of people for the future

KWANGWOO.CO.,LTD.
Head Office: 218-8, Anyang-7dong, Manan-Gu, Anyang City, Gyeunggi-Do, Korea
Tel: +82-31-446-2900 Fax: +82-31-446-2907
E-mail: webmaster@kwangwo.co.kr Homepage: www.kwangwo.co.kr