THORLABS

HNL Series
Red HeNe Lasers

User Guide

Chapter 7 Specifications

Item #	HNL008RB	HNL008LB	HNL020RB	HNL020LB	HNL050RB	HNL050LB
Laser Specifications						
Wavelength	632.8 nm		632.8 nm		632.8 nm	
Min Output Power (TEM_{00}, 633 nm)	0.8 mW		2.0 mW		5.0 mW	
Min Polarization Ratio	Random	500:1	Random	500:1	Random	500:1
Beam Diameter (TEM_{00}, $1/e^2$ points ± 3%)	0.48 mm		0.63 mm		0.81 mm	
Beam Divergence (TEM_{00}, ±3%)	1.7 mrad		1.3 mrad		1.0 mrad	
Mode Purity (TEM_{00})	>95%		>95%		>95%	
Longitudinal Mode Spacing	1090 MHz		730 MHz		435 MHz	
Max Noise (RMS) (30 Hz to 10 MHz)	0.1%		0.1%		0.2%	
Max Drift with Respect to Mean Power, Over 8 hr	±2.5%		±2.5%		±2.5%	
Max Mode Sweeping Contribution	10%		3%		2%	
Beam Pointing Stability (25 °C)						
From Cold Start	N/A		<0.10 mrad		<0.10 mrad	
After 15 min Warm-up	N/A		<0.02 mrad		<0.02 mrad	
Operating Voltage (±100 V)	1250 VDC		1800 VDC		2300 VDC	
Operating Current (±0.1 mA)	4.0 mA		6.5 mA		6.0 mA	
Max Starting Voltage	10 kVDC		10 kVDC		10 kVDC	
Physical/Mechanical Characteristics						
Maximum Warm-Up Time (95% Power)	10 minutes		10 minutes		10 minutes	
Expected Operating Lifetime	>20,000 hours		>30,000 hours		>40,000 hours	
Storage Lifetime	Indefinite (Hard-Sealed)		Indefinite (Hard-Sealed)		Indefinite (Hard-Sealed)	
Static Alignment	Center to Outer Cylinder within ±0.01" Parallel to Outer Cylinder within ±1 mrad					
Laser Head Weight	0.46 lbs (0.21 kg)		0.92 lbs (0.42 kg)		1.3 lbs (0.59 kg)	
Environmental Specifications						
Operating Temperature	-40 to 70 °C					
Non-Operating Temperature	-40 to 150 °C					
Operating Altitude	0 to 10,000 feet					
Non-Operating Altitude	0 to 70,000 feet					
Relative Humidity (Non-Condensing)	0 to 100%					
Shock	25 g for 11 ms; 100 g for 1 ms					
Safety Specifications						
CDRH/IEC 60825-1 Class	IIIa / 3R		IIIa / 3R		IIIb / 3B	

Item #	HNL100RB	HNL100LB	HNL150RB	HNL150LB	HNL225RB	HNL210LB
Laser Specifications						
Wavelength	632.8 nm		632.8 nm		632.8 nm	
Min Output Power (TEM_{00}, 633 nm)	10.0 mW		15.0 mW		22.5 mW	21.0 mW
Min Polarization Ratio	Random	500:1	Random	500:1	Random	500:1
Beam Diameter (TEM_{00}, $1/e^2$ points ± 3%)	0.68 mm		0.70 mm		0.70 mm	
Beam Divergence (TEM_{00}, ± 3%)	1.2 mrad		1.15 mrad		1.15 mrad	
Mode Purity (TEM_{00})	>95%		>95%		>95%	
Longitudinal Mode Spacing	320 MHz		257 MHz		257 MHz	
Max Noise (RMS) (30 Hz to 10 MHz)	1.0%		0.5%		0.5%	
Max Drift with Respect to Mean Power, Over 8 hr	±3.0%		±2.0%		±2.0	
Max Mode Sweeping Contribution	2%		1%		1%	
Beam Pointing Stability (25 °C)						
From Cold Start	<0.10 mrad		<0.20 mrad		<0.20 mrad	
After 15 min Warm-up	<0.02 mrad		<0.03 mrad		<0.03 mrad	
Operating Voltage (±100 V)	3100 VDC		3800 VDC		3800 VDC	
Operating Current (±0.1 mA)	6.5 mA		6.5 mA		6.5 mA	
Max Starting Voltage	10 kVDC		10 kVDC		10 kVDC	
Physical/Mechanical Characteristics						
Maximum Warm-Up Time (95% Power)	15 minutes		20 minutes		20 minutes	
Expected Operating Lifetime	>40,000 hours		>40,000 hours		>40,000 hours	
Storage Lifetime	Indefinite (Hard-Sealed)		Indefinite (Hard-Sealed)		Indefinite (Hard-Sealed)	
Static Alignment	Center to Outer Cylinder within ±0.01" Parallel to Outer Cylinder within ±1 mrad					
Laser Head Weight	1.5 lbs (0.68 kg)		2.6 lbs (1.2 kg)		2.6 lbs (1.2 kg)	
Environmental Specifications						
Operating Temperature	-40 to 70 °C					
Non-Operating Temperature	-40 to 150 °C					
Operating Altitude	0 to 10,000 feet					
Non-Operating Altitude	0 to 70,000 feet					
Relative Humidity (Non-Condensing)	0 to 100%					
Shock	25 g for 11 ms; 100 g for 1 ms					
Safety Specifications						
CDRH/IEC 60825-1 Class	IIIb / 3B		IIIb / 3B		IIIb / 3B	

Chapter 8 Mechanical Drawing

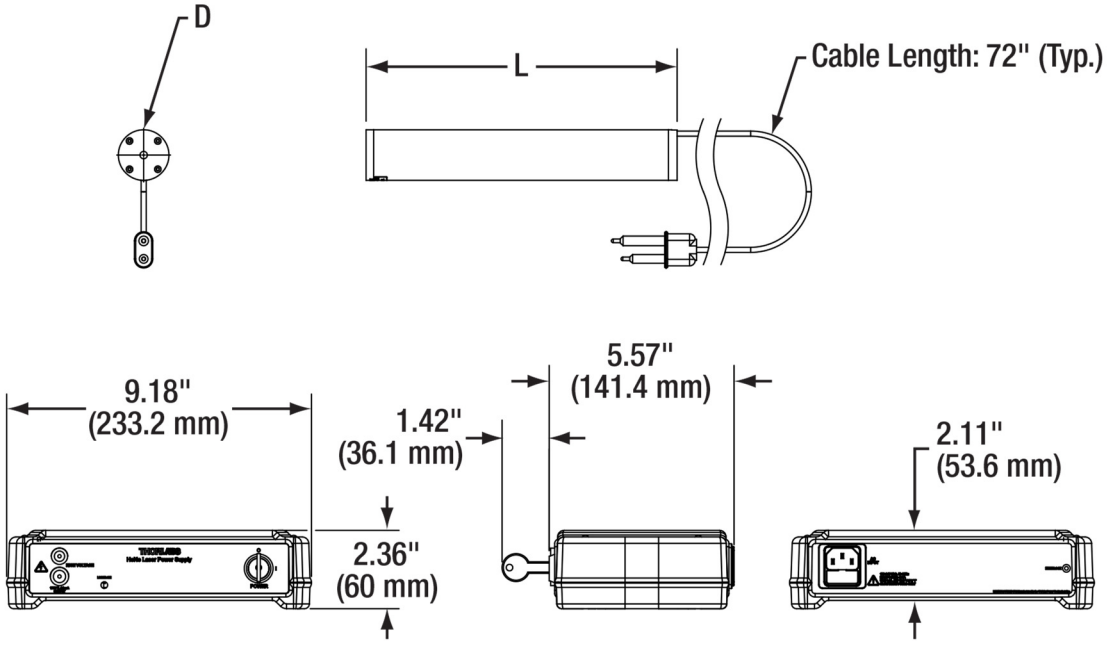


Figure 7 Dimensional Drawing

Item #	Diameter (D)	Length (L)
HNL008LB / HNL008RB	1.245" (31.6 mm)	6.905" (175.4 mm)
HNL020LB / HNL020RB	1.74" (44.20 mm)	10.70" (271.78 mm)
HNL050LB / HNL050RB		15.77" (400.56 mm)
HNL100LB / HNL100RB		19.11" (485.39 mm)
HNL150LB / HNL150RB		24.93" (633.22 mm)
HNL210LB / HNL225RB		24.93" (633.22 mm)

THORLABS

HNLS008R, HNLS008L

Self Contained, Red HeNe Laser System

User Guide

Chapter 6 Specifications

Item #	HNLS008R	HNLS008L
Wavelength	632.8 nm	
Min Output Power (TEM_{00}, 633 nm)	0.8 mW	
Min Polarization Ratio (Min)	–	500:1
Beam Drift	Not Specified	
Long Term Beam Drift	Not Specified	
Beam Diameter (TEM_{00}, $1/e^2$ points + 3%)	0.48 mm	
Beam Divergence (TEM_{00}, + 3%)	1.7 mrad	
Longitudinal Mode Spacing	1090 MHz	
Max Noise (RMS) (30 Hz to 10 MHz)	1.0%	
Max Drift with Respect to Mean Power, Over 8 hr	±2.5%	
Max Mode Sweeping Contribution	10%	
Beam Pointing Stability	Not Specified	

Physical/Mechanical Characteristics	HNL008R(L)
Max Warm-up Time (95% power)	10 min
Expected Operating Lifetime	Not Specified
Storage Lifetime	Indefinite (Hard-Sealed)
Static Alignment	Approximately 1.75" from Base
Laser Weight	3.99 lbs, (1.81 kg)

Environmental	HNL008R(L)
Temperature, Operating	-40 to 60 °C
Temperature, Non-operating	-40 to 100 °C
Altitude, Operating	0 to 10,000 ft
Altitude, Non-Operating	0 to 70,000 ft
Relative Humidity (non-condensing)	0 to 100%
Shock	25 g for 11 ms, 100 g for 1 ms

Safety	HNL008R(L)
CDRH/IEC 60825-1 Class	IIIa/3R

Chapter 7 Mechanical Drawing

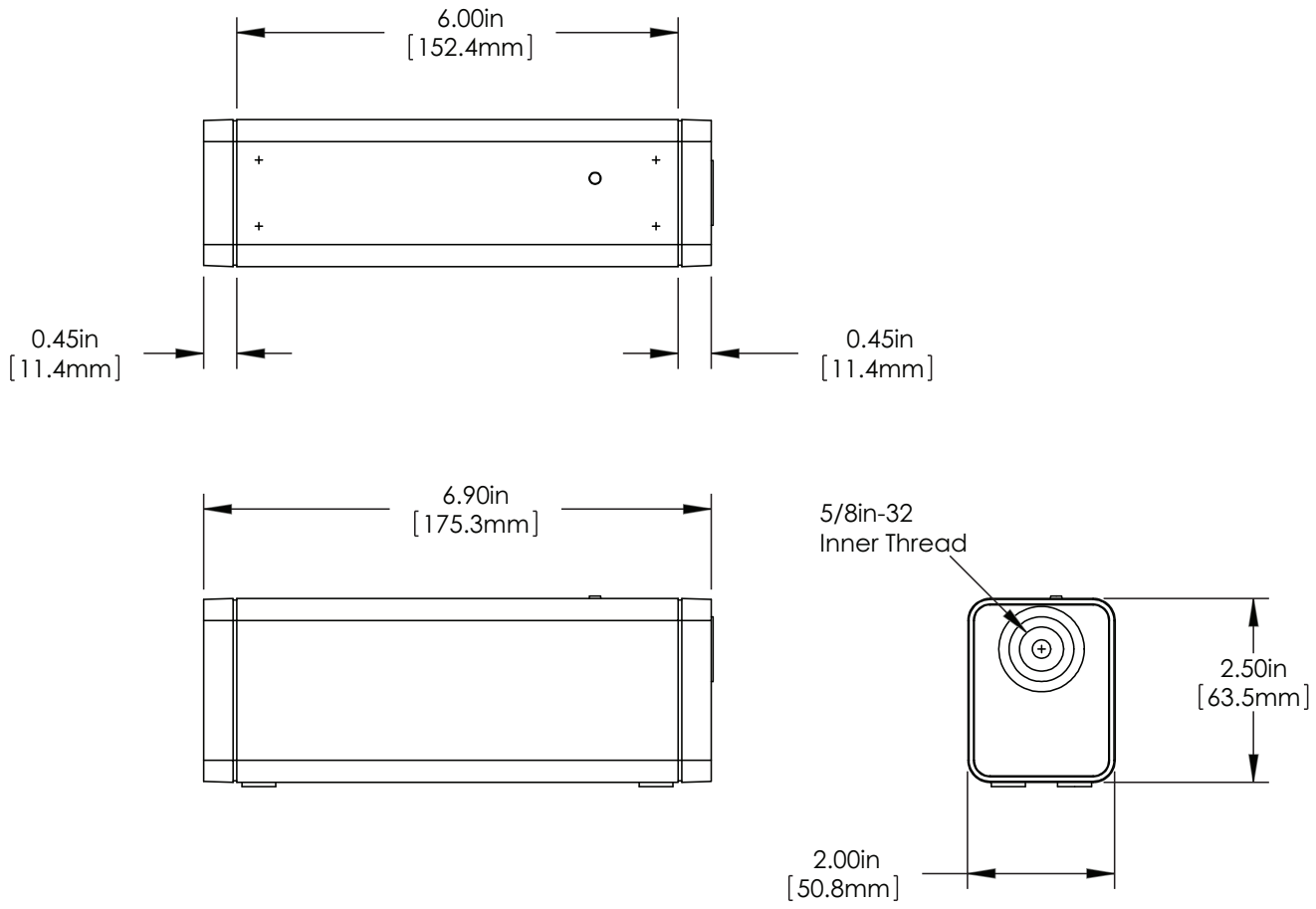


Figure 8 ***Dimensional Drawing***

KIMMON KOHA
LASERSYSTEM

He-Cd Laser

IK Series He-Cd Laser : 325nm(UV), 442nm(Blue) and Dual Wavelength

KIMMON KOHA, the world' s oldest and largest manufacturer of Helium Cadmium lasers, currently offers 18models of IK Series 325nm laser, 10 models of IK Series 442nm laser, and 10 models of IK Series Dual Wavelength laser. Over 40 years of He-Cd laser manufacturing experience allows KIMMON KOHA to provide HeCd lasers with the highest polarized output power, average lifetime, and reliability. This superior performance over the past 4 decades along with the best warranty available has resulted in KIMMON KOHA having the largest worldwide installed base of He-Cd lasers.
KIMMON KOHA' s He-Cd lasers are used in various applications, some of which are listed below. Please contact your nearest KIMMON KOHA office or distributors for assistance in selecting the proper laser model for your applications.

APPLICATION

- Photoluminescence
- Raman Spectroscopy
- Biomedicine/Bioengineering
- Flow Cytometry
- Lithography/Grating Production
- Photopolymer Exposure
- Interferometry
- Printing/Plate making
- Precision measurement
- Holography
- Defect inspection

SPECIFICAIONS

325nm Lasers

Model	Wavelength (nm)	Power (mW)	Transverse Mode	Polarization	Polarization Ratio	Beam Diameter $1/e^2$ (mm)*1	Beam Divergence (mrad)*2	Noise P-P, @30kHz~2MHz (%)*2
IK3023R-BR	325	2	TEM_{00}	Random	N/A	< 0.9	< 0.6	< 8
IK3052R-BR		5	$TEM_{multimode}$			< 1.5	< 0.8	
IK3031R-C		5	TEM_{00}	Linear	> 500:1	< 1.0	< 0.4	
IK3072R-C		10	$TEM_{multimode}$			< 1.8	< 1.0	
IK3083R-D		10	TEM_{00}			< 1.0	< 0.4	< 6
IK3101R-D		12					< 0.5	< 10
IK3202R-D		25	$TEM_{multimode}$			< 1.6	< 1.0	
IK3151R-E		18	TEM_{00}			< 1.2	< 0.4	
IK3252R-E		30	$TEM_{multimode}$			< 1.8	< 1.0	
IK3201R-F		25	TEM_{00}			< 1.2	< 0.4	< 15
IK3401R-F		40						
IK3452R-F		45	$TEM_{multimode}$			< 1.8	< 1.0	
IK3301R-G		35	TEM_{00}			< 1.2	< 0.5	
IK3501R-G		50						
IK3552R-G		60	$TEM_{multimode}$			< 1.8	< 1.0	
IK3802R-G		80						
IK3102R-G		100						

442nm Lasers

Model	Wavelength (nm)	Power (mW)	Transverse Mode	Polarization	Polarization Ratio	Beam Diameter $1/e^2$ (mm)*1	Beam Divergence (mrad)*2	Noise P-P, @30kHz~2MHz (%)*2
IK4123R-B	442	15	TEM_{00}	Linear	> 500:1	< 0.9	< 0.5	< 5
IK4153R-C		20				< 1.0		
IK4151R-C		30						< 10
IK4401R-D		50				< 1.1		
IK4601R-E		75				< 1.2		
IK4101R-F		110					< 0.4	< 15
IK4121R-G		140						
IK4131I-G		150						
IK4171I-G		180				< 1.4	< 0.5	< 20

Dual Wavelength Lasers

Model	Wavelength (nm)	Power (mW)	Transverse Mode	Polarization	Polarization Ratio	Beam Diameter $1/e^2$ (mm)*1	Beam Divergence (mrad)*2	Noise P-P, @30kHz~2MHz (%)*2
IK5351R-D	325/442	5/35	TEM_{00}	Linear	> 500:1	< 0.9/1.0	< 0.5	< 10/10
IK5352R-D		10/50	$TEM_{multimode}$			< 1.3/1.3	< 1.0	
IK5451R-E		10/50	TEM_{00}			< 1.0/1.1	< 0.5	
IK5452R-E		15/65	$TEM_{multimode}$			< 1.3/1.3	< 1.0	
IK5551R-F		15/60	TEM_{00}			< 1.1/1.2	< 0.5	< 15/15
IK5552R-F		25/100	$TEM_{multimode}$			< 1.5/1.5	< 1.0	
IK5651R-G		20/80	TEM_{00}			< 1.2/1.2	< 0.5	
IK5652R-G		30/120	$TEM_{multimode}$			< 1.8/1.8	< 1.0	
IK5751I-G		30/110	TEM_{00}			< 1.2/1.2	< 0.5	< 15/20
IK5752I-G		40/150	$TEM_{multimode}$			< 1.8/1.8	< 1.0	

Common Specifications

Model	Power Stability (%)*3	Warm Up Time (90% Power) (minutes)*3	Laser Class	Weight (kg)
IK****R-B	≦±2.0 (4 hours)	15	3B / Ⅲb	8.5
IK****R-C				11.0
IK****R-D		20		16.0
IK****R-E				17.0
IK****R-F				19.0
IK****R(I)-G				23.5

Power Supply

Model	Input Voltage (V)	Weight (kg)
KP2014C	100～240	8.0

Details by form

Head Model	Maximum Current (A)	Power Consumption (W)
IK****R-B	< 4.0	< 350
IK****R-C	< 4.2	< 480
IK****R-D	< 5.5	< 500
IK****R-E	< 7.0	< 610
IK****R-F	< 7.5	< 660
IK****R(I)-G	< 8.0	< 720

*1 Measured at 100mm from output coupler

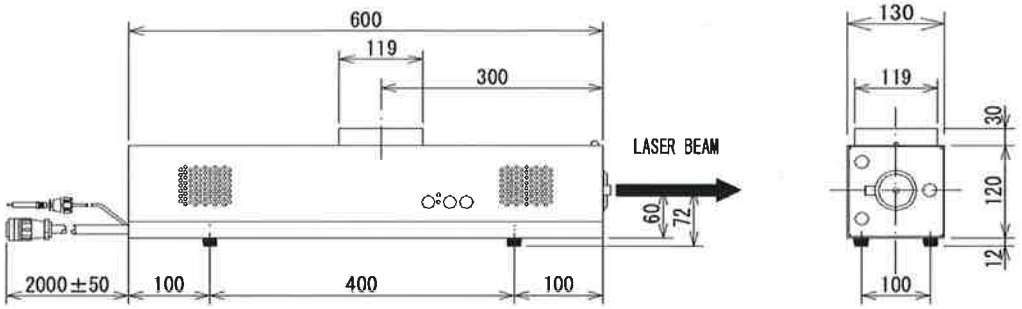
*2 By the measuring method of our company

*3 At 25℃ Constant Temperature

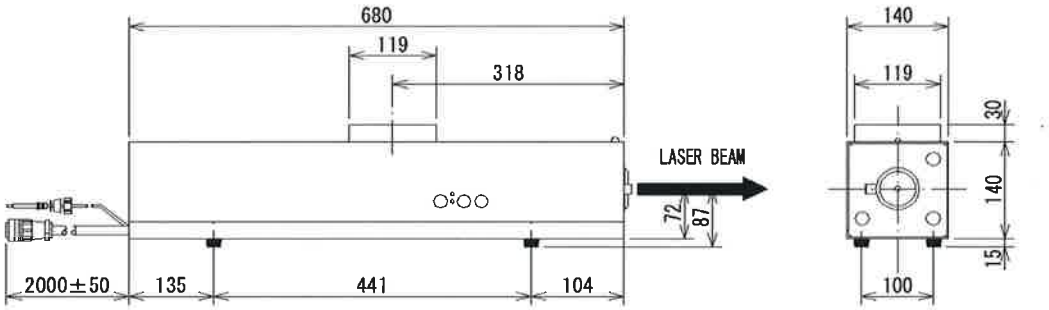
* Environmental Condition (Operation) Temperature 10～40℃, Humidity ≦90%RH
* Environmental Condition (Storage) Temperature −10～50℃, Humidity ≦90%RH
* Non-condensing
* Specifications subject to change without notice.

Dimensions (mm) Laser Head

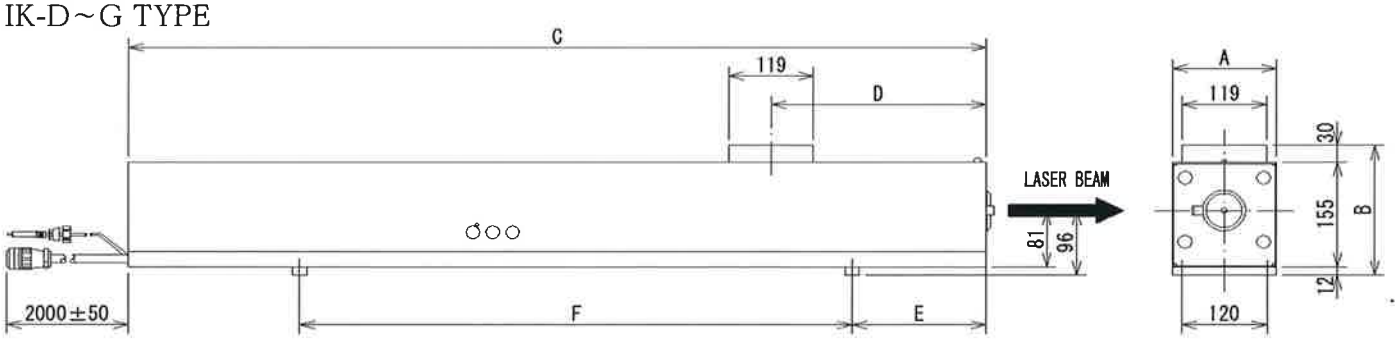
IK-B TYPE



IK-C TYPE

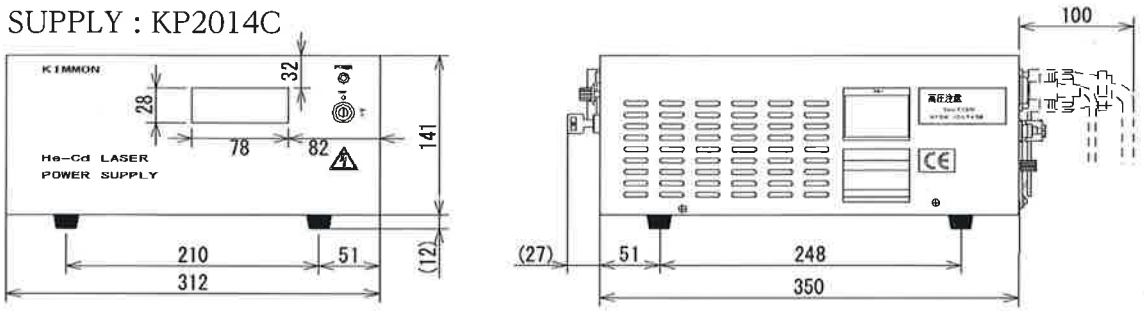


IK-D～G TYPE



	A	B	C	D	E	F
IK＊＊＊＊R－D	146	197	850	380	128	605
IK＊＊＊＊R－E	146	197	1020	300	128	775
IK＊＊＊＊R－F	146	197	1200	300	353	440
IK＊＊＊＊R(I)－G	146	197	1420	461	353	660

POWER SUPPLY : KP2014C



KIMMON KOHA CO., LTD.

TM21 BLDG., 1-53-2 ITABASHI, ITABASHI-KU, TOKYO, 173-0004 JAPAN

PHNE +81－3－5248－4820 FACSIMILE +81－3－5248－0021

E-mail: japan@kimmon.com URL: http://www.kimmon.com