

X-ray HV Power Supply Anode ground type

XPg Series

1057-06A-1



FEATURES

- Maximum 3kW and 4kW output power models are also available.
- For Anode ground type X-ray tube
- Integrated Floating AC Filament Supply
- Low ripple and high stability
- Digital interface
- Constant Voltage/Current operation with full protection for safety operation

SUMMARY

XPg Series is high stability and low ripple negative X-ray power supply with floating AC filament supply and generates stable X-ray output. Interlock and useful function are installed for safer and convenient operation.

With combination with digital controller CO series, control via GPIB, RS-232C, RS-485 and USB is available.

LINE UP

Output Voltage	Output Current	Output Power	Model
-30kV	20mA	600W	XPg-30N20
	40mA	1200W	XPg-30N40
-40kV	15mA	600W	XPg-40N15
	30mA	1200W	XPg-40N30
-50kV	12mA	600W	XPg-50N12
	24mA	1200W	XPg-50N24
-60kV	10mA	600W	XPg-60N10
	20mA	1200W	XPg-60N20
	80mA	3000W	XPg3-60N80
	107mA	4000W	XPg4-60N107
-100kV	6mA	600W	XPg-100N6
	10mA	1000W	XPg-100N10
-160kV	4mA	640W	XPg-160N4

APPLICATIONS

- X-ray non-destructive inspection
- XRD(X-ray Diffraction)
- XRF(X-ray Fluorescence Analysis)

SPECIFICATIONS

Input Voltage/Current	Input Voltage	1 ϕ		
		100VAC* ~120VAC	200VAC ~240VAC	200VAC* ~220VAC
Output Power				
600W-640W		13A	6.5A	—
1000W		—	11.5A	—
1200W		—	13A	—
3000W		—	20A	11A
4000W		—	25A	15A

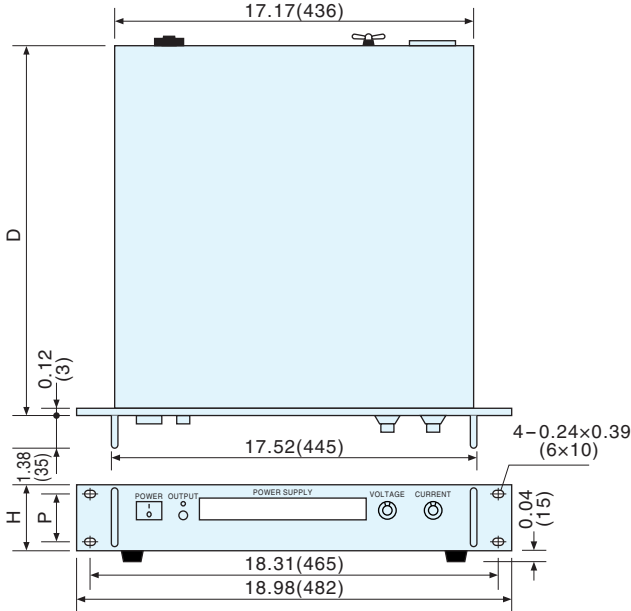
*option

Output Control	Local mode : Voltage	front panel 10-turn potentiometer
	Current	front panel 10-turn potentiometer
Remote mode :	Voltage	external voltage source (Vcon) 0Vdc to 10Vdc (input impedance greater than 1M Ω) or by external 5k Ω potentiometer
	Current	external voltage source (Icon) 0Vdc to 10Vdc (input impedance greater than 1M Ω) or by external 5k Ω potentiometer
Voltage Regulation	Line	: $\pm 0.005\%$ of maximum voltage for $\pm 10\%$ input line change
	Load	: 0.005% of maximum voltage for full load change
Current Regulation	Line	: $\pm 0.05\%$ for $\pm 10\%$ input line change
	Load	: 0.05% $\pm 100\mu\text{A}$ for full load change
Ripple		Less than 0.03% rms (below 1kHz) Less than 0.7% rms (over 1kHz)
Stability		0.01%/8Hr

Temperature Coef.	50ppm/ $^{\circ}\text{C}$
Filament	10V 5A AC(except 3000W and 4000W model) 12V 5A AC(3000W and 4000W model) stand-by 0.5A Filament limit is variable with 10-turn potentiometer on rear panel
Metering	Output voltage : 3 $\frac{1}{2}$ -digit digital meter -1999 Output current : 3 $\frac{1}{2}$ -digit digital meter 1999
Monitor Output	Voltage monitor:0V to 10V (output impedance 1k Ω typ.) Current monitor:0V to 10V (output impedance 1k Ω typ.)
Protections	Protection against over voltage, over current, output short circuit, Filament protection, arc and over temperature. Disable HV output after AC power line recovery.
Other Functions	Remote ON/OFF switch (outside relay) Interlock (outside relay) Output status signal (inside relay)
Output Connector	30kV to 60kV : Federal Standard 75kV 3-pin 100kV, 160kV : European Standard R24
Temperature	Operating: 0 $^{\circ}\text{C}$ to + 40 $^{\circ}\text{C}$ Storage:-40 $^{\circ}\text{C}$ to +85 $^{\circ}\text{C}$
Humidity	0% to 80% RH (no condensing)
Accessories	AC line input cable 2.5m (flying lead) (1) Instruction Manual (1)

★ These specifications are at the maximum rated output after a 2Hr warm-up period unless otherwise specified.

DIMENSIONS inch (mm)



MODEL	Standard(EIA)		D
	H	P	
-30kV to -50kV -60kV(600W,1200W)	5.24 (133)	2.25 (57.2)	18.98 (482)
-60kV (3000W,4000W)	5.24 (133)	2.25 (57.2)	21.65 (550)
-100kV,-160kV	6.97 (177)	4 (101.6)	24.02 (610)

OPTIONS

- L(100V) 100VAC to 120VAC 1Ø (only for 600W model)
- L(200V3P) 200VAC 3Ø(only for 3000W and 4000W model)
- LDf Dual filament
Large focus spot, small focus spot is selectable.
- LT₁ Interlock remote reset
AC line remote reset(recovery from HV disable status)
- CNF-75-3P(5) HV output cable for 30kV to 60kV(Plugs on both end 5meters)
- CNF-75-3P(10) HV output cable for 30kV to 60kV(Plugs on both end 10meters)
- CNXP-160-3P(5) 100kV, 160kV HV output cable(Plugs on both end 5meters)
- CNXP-160-3P(10) 100kV, 160kV HV output cable(Plugs on both end 10meters)

★ Add L mark to the model number when ordering.
[e.g. XPg-30N20-LDf with CNF-75-3P(5)]
Option code is ordered alphabetically and by input voltage value.

Connection with X-ray tube

Below diagram shows the connection of power supply and X-ray tube.

[Standard type]

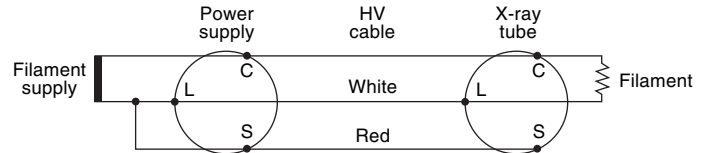


fig.1

CAUTION S and L is connected inside.

OR

Contact to sales in advance if X-ray tube with C and S of fig.1 or C and L of fig.2 is shorted is used.

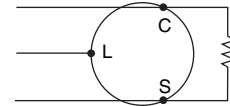
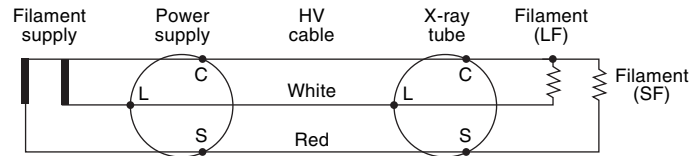


fig.2

[-LDf option(Dual filament) type]



*Wrong connection could cause failure or malfunction.
Make sure the filament connection with your X-ray tube when ordering.

Rack Mount type

X-ray HV Power Supply cathode ground type

XKg Series

1058-0594-1



* Images is 3kW/4kW type.
* X-ray tube is separate item.

FEATURES

- Maximum 3kW and 4kW output power models are also available.
- For Cathode ground type X-ray tube
- Integrated filament supply
- Low ripple and high stability
- Digital interface
- Constant Voltage/Current operation with full protection for safety operation

SUMMARY

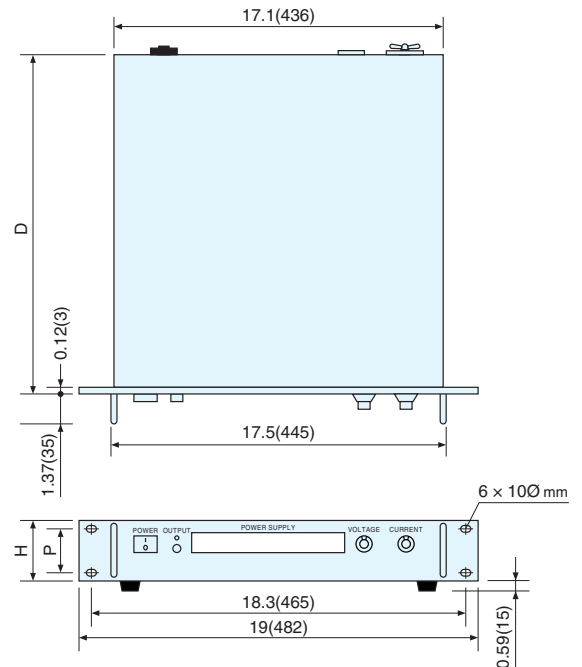
XKg Series is high stability and low ripple positive X-ray power supply with integrated filament supply and generates stable x-ray output. Interlock and useful function are installed for safer and convenient operation.

With combination with digital controller CO series, control via GPIB, RS-232C, RS-485 and USB is available.

APPLICATIONS

- XRF(X-ray Fluorescence Analysis)
- XRD(X-ray Diffraction)
- X-ray non-destructive inspection

DIMENSIONS inch (mm)



Output Voltage	Output Current	Output Power	Model
30kV	0.5mA	15W	XKg-30P0.5
	1mA	30W	XKg-30P1
	2mA	60W	XKg-30P2
	3.3mA	100W	XKg-30P3.3
40kV	0.5mA	20W	XKg-40P0.5
	0.75mA	30W	XKg-40P0.75
	1.5mA	60W	XKg-40P1.5
	2.5mA	100W	XKg-40P2.5
50kV	3.75mA	150W	XKg-40P3.75
	0.6mA	30W	XKg-50P0.6
	1.2mA	60W	XKg-50P1.2
	2mA	100W	XKg-50P2
60kV	3mA	150W	XKg-50P3
	0.5mA	30W	XKg-60P0.5
	1mA	60W	XKg-60P1
	1.6mA	100W	XKg-60P1.6
80kV	2.5mA	150W	XKg-60P2.5
	100mA	3000W	XKg3-60P100
	134mA	4000W	XKg4-60P134
	0.37mA	30W	XKg-80P0.37
100kV	0.75mA	60W	XKg-80P0.75
	1.25mA	100W	XKg-80P1.25
	1.87mA	150W	XKg-80P1.87
	0.3mA	30W	XKg-100P0.3
120kV	0.6mA	60W	XKg-100P0.6
	1mA	100W	XKg-100P1
	1.5mA	150W	XKg-100P1.5
	3mA	300W	XKg-100P3
140kV	0.25mA	30W	XKg-120P0.25
	0.5mA	60W	XKg-120P0.5
	0.83mA	100W	XKg-120P0.83
	1.25mA	150W	XKg-120P1.25
160kV	2.5mA	300W	XKg-120P2.5
	0.21mA	30W	XKg-140P0.21
	0.42mA	60W	XKg-140P0.42
	0.71mA	100W	XKg-140P0.71
160kV	1.07mA	150W	XKg-140P1.07
	2.14mA	300W	XKg-140P2.14
	0.62mA	100W	XKg-160P0.62
	0.93mA	150W	XKg-160P0.93
160kV	1.87mA	300W	XKg-160P1.87

Coming Soon!

MODEL	(EIA)		D
	H	P	
30kV to 60kV (except 3000W and 4000W model)	3.5(89)	3(76.2)	19(482)
60kV (3000W and 4000W model)	5.24(133)	2.25(57.2)	21.7(550)
80kV to 120kV	5.24(133)	2.25(57.2)	24(610)
140kV, 160kV	7(177)	4(101.6)	24(610)


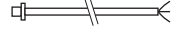


■ SPECIFICATIONS

Input Voltage/Current	Input Voltage	1 φ		3 φ
		100VAC to 120VAC	200VAC to 240VAC	200VAC to 220VAC
Output	15W to 30W	2A	1A*	—
	60W	2.5A	1.3A*	—
	100W	3A	1.5A*	—
	150W	4A	2A*	—
	300W	6A	3A*	—
	3000W	—	20A	11A*
	4000W	—	25A	15A*

*option

- Output Control** Local mode : Voltage front panel 10-turn potentiometer
Current front panel 10-turn potentiometer
Remote mode : Voltage external voltage source (Vcon) 0Vdc to 10Vdc (input impedance greater than 1MΩ) or by external 5kΩ potentiometer
Current external voltage source (Icon) 0Vdc to 10Vdc (input impedance greater than 1MΩ) or by external 5kΩ potentiometer
- Voltage Regulation** Line : ±0.005% of maximum voltage for ±10% input line change
Load : 0.005% of maximum voltage for full load change
- Current Regulation** Line : ± 0.05% for ±10% input line change
Load : 0.05% ±100μA for full load change
- Ripple** Less than 0.03% rms (30kV to 120kV model)
Less than 0.03% rms (below 1kHz) } (140kV, 160kV model)
Less than 0.7% rms (over 1kHz)
- Stability** 0.01%/8Hr
- Temperature Coef.** 50ppm/ °C
- Filament** 10V 5A DC(except 3000W and 4000W model)
12V 12A AC(3000W and 4000W model)
stand-by 0.5A
Filament current limit is variable with 20-turn trimmer on rear panel.
- Metering** Output voltage 3½-digit digital meter 1999
Output current 3½-digit digital meter 1999
- Monitor Output** Voltage monitor 0V to 10V (output impedance 1kΩ)
Current monitor 0V to 10V (output impedance 1kΩ)
- Filament monitor** Filament voltage monitor: 10V/ filament V 10V (Output impedance 1kΩ)
Filament current monitor: 10V/ filament I 5A (Output impedance 1kΩ)
- Protections** Protection against over voltage, over current, output short circuit, Filament protection, arc and over temperature.
Disable HV output after AC power line recovery
- Output Connector** 30kV to 120kV : Matsusada original connector
60kV(3000W,4000W):Federal Standard 75kV 3-pin
140kV, 160kV : European Standard R24
- Other Functions** Remote ON/OFF switch (outside relay), Interlock (outside relay)
Output status signal (inside relay)
- Temperature** Operating: 0°C to + 40°C Storage -40°C to +85°C
- Humidity** 0% to 80% RH (no condensing)
- Accessories** AC line input cable 2.5m (1), Instruction Manual (1)
Shielded HV output (cable 2.5m(flying lead))(1)For 140kV, 160kV, 3000W and 4000W type optionally available)

■ INPUT,OUTPUT CONNECTOR AND CABLE

AC INPUT	15W to 300W model		3-pin plug
	15W to 300W model -L (200V) option		OPEN
3000W model 4000W model		OPEN	
OUTPUT	30kV		*CN-30-MHVP
	40kV		*CN-45-MHVP
	50kV,60kV(under 300W)		*CN-60-MHVP
	80kV to 120kV		*CN-120AR-MHVP
	140kV, 160kV		Output connector and cable are separate items.
3000W model 4000W model			

* Standard cable length is 2.5m.
For 5 meter length, suffix (5) to the model number. (e.g.) CN-120AR-MHVP (5)

■ OPTIONS

- L(200V) 200VAC to 240VAC 1Ø (only for 15 to 300W type)
 - L(200V3P) 200VAC to 220VAC 3Ø (only for 3000W and 4000W model)
 - LB Bias output. -300V variable 2.5mA
 - LT1 Interlock remote reset
AC line remote reset (recovery from HV disable status)
 - LX HV connector compatible with XR series
 - CNF-75-3P(5) HV output cable for 3000W and 4000W model(Plugs on both end 5meters)
 - CNF-75-3P(10) HV output cable for 3000W and 4000W model(Plugs on both end 10meters)
 - CNXK-160-3P(5) HV output cable for 140kV and 160kV(Plugs on both end 5meters)
 - CNXK-160-3P(10) HV output cable for 140kV and 160kV(Plugs on both end 10meters)
- ★ Add -L mark to the model number when ordering.
(e.g.) XKg-160P1.87-LBT1 (200V) with CNXK-160-3P(5)
Option code is ordered alphabetically and by input voltage value.



Digital Controller CO series

Interface: GPIB/RS-232C/RS-485/USB

The CO series is a line of adapters used to digitally control Matsusada's High Voltage, DC, and AC power supplies via personal computer. It is ideally suited to building safe, stable, versatile and highly accurate automatic inspection and measurement systems, saving your time and cutting labor costs. And, the fiber optic connection secures electrical isolation, resulting in safer operation even when combined with power supplies of different potentials.

- ▶ High resolution 16bit(1/65535)
- ▶ Thorough measures against noises
- ▶ Complete isolation by fiber optic cable
- ▶ Listener/Talker function

For more information, please refer to CO series catalog.