High Voltage Power Supplies

For the safe operation of proximity focused image intensifier diodes PROXIFIER® with 10 kV, 12 kV or 15 kV acceleration voltage, as well as for MCP image intensifiers MCP-PROXIFIER® and open MCP detectors with 1, 2, or 3 microchannel plates, PROXITRONIC offers suitable integrated or separate high voltage power supplies. Integrated power supplies are potted into an annular, cylindrical housing together with the image intensifier. Separate power supplies are supplied in a rectangular mumetal housing. The free cable ends are connected to the corresponding cables of the image intensifier or MCP detector. To operate an image intensifier or MCP detector with a power supply, only a low DC voltage of +12 V is required. Gain control of MCP image intensifiers and open MCP detector systems with a PROXITRONIC Power Supply is adjusted by varying the MCP voltage input from 0 V to 5 V continuously from any adjustable low-voltage external DC voltage source.

Technical Data of the High Voltage Power Supplies for Image Intensifier Diodes PROXIFIER®

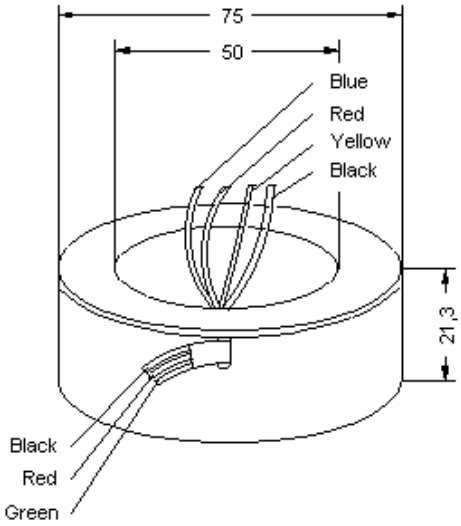
	Minimum	Typical	Maximum	Remarks
Input Voltage	+10 V	+12 V	+15 V	
Input Current		30 mA	75 mA	short circuit limitation
Output Impedance	300 MΩ	400 MΩ	500 MΩ	
Photocathode Voltage		0 V		ground connection
Phosphor Screen Voltage		+10 kV, +12 kV, +15 kV		depending on type

Technical Data of the High Voltage Power Supplies for MCP Image Intensifiers MCP-PROXIFIER® and Open MCP Detector Systems

	Minimum	Typical	Maximum	Remarks
Input Voltage	+10 V	+12 V	+15 V	
Input Current		30 mA	75 mA	short circuit limitation
Photocathode: Impedance		1 GΩ		other values available
Photocathode: Voltage	-180 V	-200 V	-220 V	fixed against MCP input
MCP Input		0 V		ground connection
MCP Output Voltage:				
Single MCP	+400 V		+800 V	adjustable against MCP input
Double MCP	+1000 V		+1800 V	
Triple MCP	+1500 V		+2700 V	
Phosphor Screen Voltage		+6000 V	+7000 V	fixed against MCP output
Control Voltage	0 V		+5 V	external gain control

Dimensions and Connections

Integrated High Voltage Power Supply for 25 mm MCP Image Intensifiers MCP-PROXIFIER®



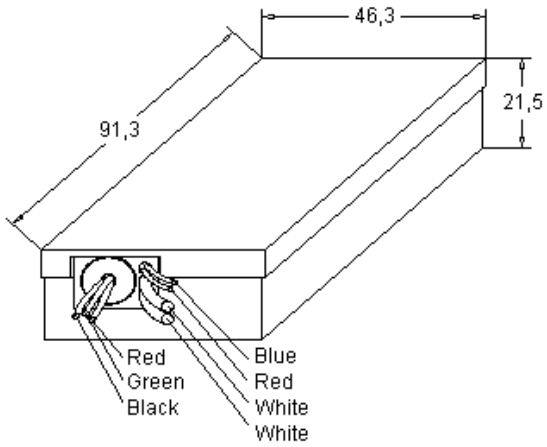
High Voltage Outputs

- Blue: Photocathode
- Red: MCP input (ground)
- Black: MCP output
- Yellow: phosphor screen

Low Voltage Inputs

- Red: +10 V ... +15 V
- Green: external control voltage from 0 V to +5 V for MCP image intensifier gain adjustment
- Black: ground

Separate High Voltage Power Supply for MCP Image Intensifiers MCP-PROXIFIER® and Open MCP Detectors



High Voltage Outputs

- Blue: photocathode
- Red: MCP input (ground)
- Upper white silicon cable: MCP output
- Bottom white silicon cable: phosphor screen

Low Voltage Inputs

- Red: +10 V ... +15 V
- Green: external control voltage from 0 V to +5 V for MCP image intensifier gain adjustment
- Black: ground

All image intensifiers with a fiber optic output window have an ITO (Indium Tin Oxide) coating on the outside of the fiber optic. This transparent and conductive layer is contacted by an additional green wire. The standard setting of the ITO coating is ground.

The outer diameter of the integrated high voltage power supplies for all 40 mm image intensifiers is 95 mm.

High voltage power supplies for image intensifier diodes PROXIFIER® have the same dimensions as shown in the drawings above, but with the omission of the connections for the MCP and gain control voltages.

The separate high voltage power supplies for PROXIFIER® diodes have a special heavy duty high voltage silicon cable (white) for connection to the phosphor screen and a teflon isolated ground wire (blue) for connection to the photocathode. On the low voltage input side, instead of cables there are 2 pins for connection to the supply voltage which are marked with "-" (ground) and "+" (+10 V ... +15 V).

Low voltage cable length is normally 30 cm. Image intensifier and separate power supply are also connected with 30 cm cables. Longer cables are available on request.

Type Nomenclature

High voltage power supplies for image intensifier diodes PROXIFIER®:

Image Intensifier Type Family	High Voltage Power Supply	Design
BV 250... 08	PS 1015 Q00 D10P	separate
BV 250... 10	PS 1015 Q00 D12P	separate
BV 250... 18	PS 1015 Q00 D15P	separate
BV 253... 08	PS 1015 R75 D10P	integrated
BV 253... 10	PS 1015 R75 D12P	integrated
BV 253... 18	PS 1015 R75 D15P	integrated
BV 400... 08	PS 1015 Q00 D10P	separate
BV 400... 10	PS 1015 Q00 D12P	separate
BV 400... 18	PS 1015 Q00 D15P	separate
BV 400... 08	PS 1015 R95 D10P	integrated
BV 400... 10	PS 1015 R95 D12P	integrated
BV 400... 18	PS 1015 R95 D15P	integrated

High voltage power supplies for MCP image intensifiers MCP-PROXIFIER®:

Image Intensifier Type Family	High Voltage Power Supply	Design
BV 256...	PS 1015 Q00 S06P	separate
BV 256... -V	PS 1015 Q00 V06P	separate
BV 256... -Z	PS 1015 Q00 Z06P	separate
BV 258...	PS 1015 R75 S06P	integrated
BV 258... -V	PS 1015 R75 V06P	integrated
BV 258... -Z	PS 1015 R75 Z06P	integrated
BV 406...	PS 1015 Q00 S06P	separate
BV 406... -V	PS 1015 Q00 V06P	separate
BV 406... -Z	PS 1015 Q00 Z06P	separate
BV 408...	PS 1015 R95 S06P	integrated
BV 408... -V	PS 1015 R95 V06P	integrated
BV 408... -Z	PS 1015 R95 Z06P	integrated

High voltage power supplies for open MCP detectors:

MCP Detector with	High Voltage Power Supply	Design
1 MCP	PS 1015 Q00 S06P	separate
2 MCPs	PS 1015 Q00 V06P	separate
3 MCPs	PS 1015 Q00 Z06P	separate

Gating of Image Intensifiers

Gating of MCP image intensifiers is easily accomplished due to the power supply's photocathode voltage high output impedance. By applying +12 V from a low impedance voltage source, the photocathode is securely switched off and no light will pass through. Upon disconnecting this voltage, the photocathode returns to its operational voltage after a delay of 50 ms to 100 ms. If a shorter delay is required, a separate low Impedance pulse and delay generator is required to supply pulses between -180 V (on) and +12 V (off) for 100 ns or longer gate times, or between -180 V (on) and +80 V (off) for 5 ns or longer gate times, depending upon the shortest pulse duration needed.

PROXITRONIC offers pulse generators and pulse amplifiers for all image intensifiers. Technical details are described in the corresponding data bulletins.