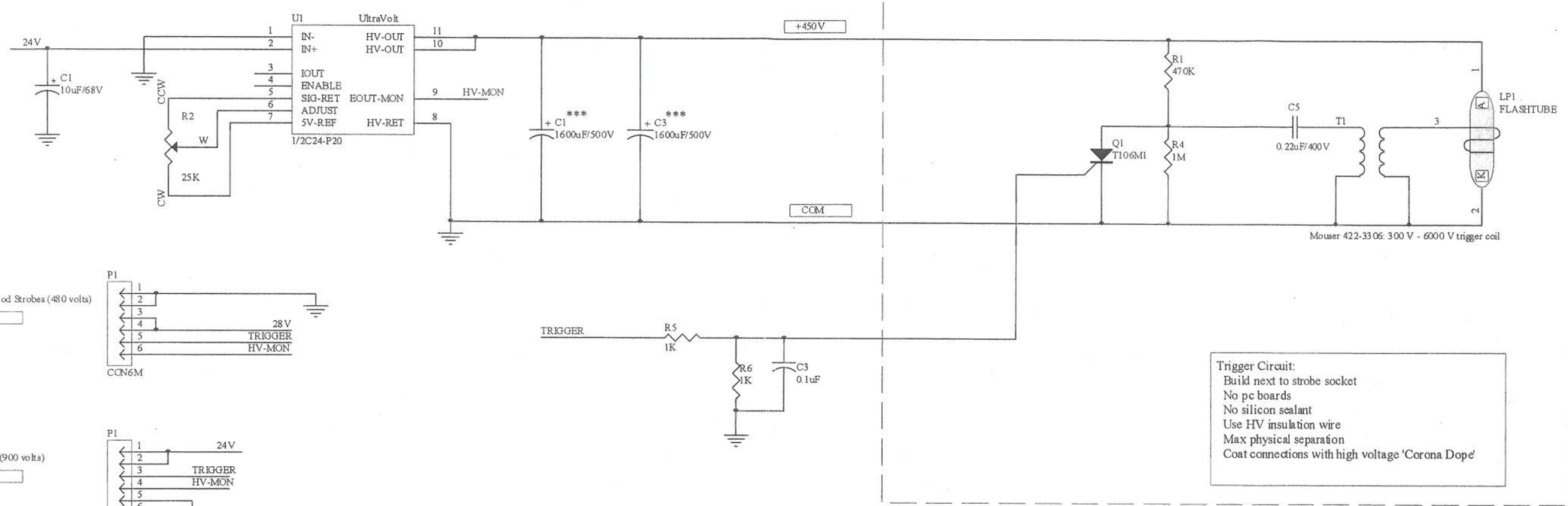
H2O Strobes

H2O Strobe	Integrating Sphere #	2 or 4 caps	+450V (before)	+450V (reset)	-450V (before)	Charge and ~~+450~~ reset Fire V.	Bench Test OK	Cold Test OK
1	67194	4				900/866	✓ 7/29	
2	67203	2				901/853	✓-1 7/29	
3	67204	4				902/860	✓ 7/29	
4	67199	2				900/896	✓ 7/29	
5	67196	4					✓	
6	67200	2					✓	
7	67197	4					✓	
8	67202	2					✓	
9	67198	4					✓ 8/5/05	
10	67201	2					✓ 8/5/05	

10/18/2004 Camera Tripod spares (white plastic box in wood shipping box)

	o-rings	
4	2-010	popup buoy
4	2-150	popup buoy
2	2-234	372-377 camera window seal
2	2-241	372-377 camera window retainer bushing
3	2-261	Camera tripod to pressure housing, radial o-ring
2	2-263	Camera tripod to pressure housing, face o-ring
	Impulse Connectors	
1	XSG-4-BCL	4 pin male bulkhead
1	XSG-6-BCL	6 pin male bulkhead w/ 6 pin IDC circuit board connector (mates w/ strobe pigtail)
2	XSG-6-BCL	6 pin male bulkhead, new
1	???	4 pin male pigtail w/ 6 pin IDC circuit board connector, some sort of test cable?
	Electronics, Camera Controller	
1	Onset Model 3 w/ Camera Controller Interface board (complete functional spare?)	
2	Camera Controller Interface board, just the bare board	
	Aromat DS1E-M-DC24V	Relay, 24 V, SPDT
	Electronics, Strobe & strobe head	
1	K18G53, 4 pin rnd coil	Hi-voltage trigger coil, Mouser # 422-2310
4	SCR, T106M1	Teccor 4.0A 600V SCR, Digi-Key
4	Mallory 450 MFD 500 VDC, MA 98-007 55 C, DuraCap 99-39	capacitors for strobe, 4 req for 200 WS, 8 req for 400 WS
1	UltraVolt 1/2C24- P20	High voltage power supply
1	Lumedyne # 090 flashtube	200 WS, used from 1/28/94
1	Lmedyne #097 flashtube	400 WS, 800 WS max, used from 6/96
1	UltraVolt 1/2C24- N20	High voltage power supply, other polarity (not used here)

This is all sealed inside a Benthos 10" Glass Sphere



Long Term Camera Tripod Strobes (480 volts)

P1

Long H2O Strobes (900 volts)

P1

Trigger Circuit:
- Build next to strobe socket
- No pc boards
- No silicon sealant
- Use HV insulation wire
- Max physical separation
- Coat connections with high voltage 'Corona Dope'

*** Strobe Energy in Joules = Watt-Seconds = 1/2 * C * V * V

For the Long Term Camera Strobes & Lumadyne bulbs:

with the original circuit,
- Set V = 471 volts will produce
  - 400 J w/ (8) 450 uF capacitors
  - 200 J w/ (4) 450 uF capacitors

with the H2O pc boards, just use the positive UltraVolt 1/2C24-P20
- Set V = 500 volts will produce
  - 400 J w/ (2) 1600 uF capacitors
  - 200 J w/ (1) 1600 uF capacitor

Right Strobe #1: high power 400 J strobe
Left Strobe #2: low power 200 J strobe

Title	**10" Benthos Glass Sphere Strobe**	
Project	Printed 7/21/2006 12:05:50 PM	
Number	Revision	
Drawn by Mike Kirk *	Tel: 858-534-6729	
File: D:\KenSmith\Camera_Strobes\Sch\Strobe\Strobe interface\Strobe interface.sch		
Size B	Ken Smith Laboratory Scripps Institution of Oceanography University of California, San Diego 9500 Gilman Drive La Jolla, California 92093-0202	
Sheet 1 of 1		

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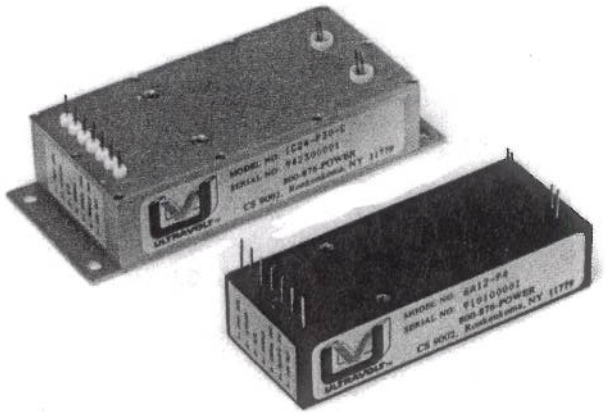
"C" SERIES

HIGH VOLTAGE POWER SUPPLY

- ☐ 7 Models from 0 to 125V through 0 to 6kV
- ☐ 20 Watts of output power
- ☐ Maximum Iout capability down to 0 Volts
- ☐ Extended Iout during charge/rise time
- ☐ Indefinite output short-circuit protection
- ☐ Very fast rise with very low overshoot
- ☐ Output voltage & current monitors



GENERAL INFORMATION:

The "C" Series of High Voltage DC-DC converters are designed for fast rise time/charging applications. Designed and built utilizing state of the art power conversion topology, these units feature surface mount technology and encapsulation techniques providing high reliability and low cost. See Application Note AP-10 for more charging information.

DESIGN METHODOLOGY:

The "C" converters utilize a dual ended forward converter topology with a nominal switching frequency of >60 Khz. A precision reference is provided so the remote control can program the power supply for a specific voltage. A soft-start circuit brings the converter to full power over a 1ms period, reducing surges on the source supply. A constant frequency PWM regulation system controls the MOSFET push-pull power stage and high voltage transformer. The power stage is protected from output current overloads or short circuits via a secondary current limit circuit. This current limit is optimized not to trigger during high charge currents that exceed DC limits. The high voltage developed in the multistage multiplier generates feedback voltage which is sent to the CTRL circuit to maintain regulation. The AC feedback networks are configured for maximum speed of rise with little or no overshoot into capacitive loads.

WIDE INPUT VOLTAGE RANGE:

The "C" Series is designed for full DC power operation at up to 90% efficiencies. A wide input range of +23 to +30 VDC maintains full output power. The derated input range is +9 to +32 VDC. The input voltage range increases as the output voltage is lowered. See Application Note AP-16 for protection information.

WIDE OUTPUT RANGE:

The "C" Series is a non-isolated, unipolar converter. Positive or negative output must be specified. Output voltage is adjustable from 0 to 125, 250, 500, 1kV, 2kV, 4kV or 6kV. As the output voltage is reduced towards 0, the maximum current capability remains unchanged.

OUTPUT VOLTAGE & CURRENT MONITORS:

The "C" Series features a 100:1 voltage monitor. The monitor output impedance is calibrated for use with a 10 Megohm input impedance meter. Units 2kV or higher have a 100 Megohm/1.1 Megohm divider, units below 2kV use a 10 Megohm/102K divider. Overall accuracy is ± 2.5% with a temperature coefficient of ± 200 ppm per °C.

Current from the high voltage multiplier can be monitored by reading the voltage appearing between Output Monitor pin 3 and Signal Ground pin 5. Internal voltage dividers create a small linear offset voltage. See Application Note AP-13.

REMOTE CONTROL:

The "C" Series is remotely programmed with 0 to +5 VDC to produce an output voltage. Input may be from a control voltage, DAC, variable or fixed resistor. On a negative output converter the programming logic of the remote adjust would be inverted, i.e.: +5 to 0 VDC. Connections are on the converter for the internal reference, analog remote adjust and the signal ground. The reference is +5.0 VDC, temperature compensated with a 464 ohm output impedance. See figures E & F or application note AP-1 for more information.

ENABLE/DISABLE:

The "C" converters also have an enable function. When the enable is TTL 0 (<+0.7v Isink=1mA) the converter is in a standby mode and input current is reduced to < 30 mA. All functions other than the internal reference are shut down. If the enable pin is left unconnected, TTL 1, or at greater voltages up to +32 VDC the converter will initiate soft-start before beginning to operate normally. The open circuit output voltage from the enable pin is < +5 VDC. In the inhibit mode 1mA will have to be sunk for proper shutdown.

MECHANICAL:

"C" Series converters are in PCB mountable plastic cases requiring a footprint of 5.5 In^2 and only 4.3 In^3 of volume. A mounting bracket kit, BR-1, is available for chassis mounting the standard plastic package. The Series is also available in an RF-Tight metal PCB/chassis mount package. See Application Note AP-6 for thermal considerations and mounting configurations. All models are available with optional wrap-around Mu-Metal Shielding.

ENVIRONMENTAL:

The "C" Series provides full power operation at case temperatures from -20 to +65 °C. All units receive a 24-hour burn-in prior to final testing.

ULTRAVOLT

C S 9002
RONKONKOMA, NY 11779

800-876-POWER

FAX 516-471-4696

"Making High Voltage Easier"