

# PHOTOMULTIPLIER TUBE

## 83049 542

**BURLE**

PRELIMINARY  
August 2004

- 3" (76mm) PMT with Integrated VDN and HV Power Supply.
- Scintillation Counting, including Gamma Camera Applications.
- User-Friendly Interface.



The 83049-542 is a module consisting of an 83049F three inch diameter PMT, a positive high voltage VDN, and a PF1041P positive high voltage power supply, and associated cabling for use in pulse counting. The 83049F is an 8 stage, bialkali PMT with a spectral sensitivity spanning 300 – 700 nm. The positive high voltage VDN is optimized for pulse counting. The anode output is internally AC coupled, isolating the user from High Voltage. The user must supply an appropriate load resistor for reading output signal since the 83049 542 does not allow for the passage of a DC signal. The PF1041P is a small solid-state power supply capable of providing up to 1500 volts DC output at 1 mA. A 0 to +10 DC voltage input provides for a 0 to +1500 volt output to the PMT according to the relation:  $HV(PMT) \sim 165 * V(\text{Input}) - 130$  volts. The module is optimized for excellent pulse height resolution for applications such as scintillation pulse counting. An optional AJ2253 magnetic shield is available which reduces the magnetic field sensitivity of the module. See the BURLE Photomultiplier Handbook for in depth technical discussions regarding the use of BURLE Photomultiplier Tube Products.

### GENERAL: Photomultiplier with Voltage Divider Network, Power Supply, and Cables.

Parameter		Value or Function	Unit
Spectral Response		300 to 700	nm
Wavelength of Maximum Response		370	nm
Photocathode	Material	Bialkali	--
Window Material and Cross Section		B270 Glass or Equivalent. Plano-plano.	--
Dynode	Structure	Box and Grid / Linear	--
	Number of Stages	8	--
Voltage Divider Network		Positive HV	Volts
Power Supply		PF1041P	
Power Supply: Control voltage input		0 to 10	+Volts DC
Power Supply: Relation between control voltage input and voltage supplied to PMT.		$HV(PMT) \sim 165 * V(\text{Control voltage input}) - 130$	+Volts DC
Output Cables: Black		Cathode ground (internally attached to signal ground output cable).	
Output Cables: Red		Input control voltage (0 to +10 volts)	
Output Cables: RG174U		50 ohm signal output and signal ground cable.	



### Maximum Ratings (Absolute Maximum Values)

Parameter		Value	Unit
Supply Voltage	Between Anode and Cathode	1500	Vdc
Average Anode Current		0.1	mA
Ambient Temperature		- 40 to + 70	C

### Characteristics (at 25 °C)

Parameter		Min.	Typ.	Max.	Unit
Anode Sensitivity	Blue (with CS-5-58 filter)	0.5		--	A/lm-b
Current Amplification		--	88500	--	--
Anode Dark Current (after 30min, HV = 1000 V) <sup>1)</sup>		--	-	30	nA
Pulse Height Resolution (with 3 x 3 Inch NaI(Tl). Co-57) <sup>1)</sup>			10.0	--	%

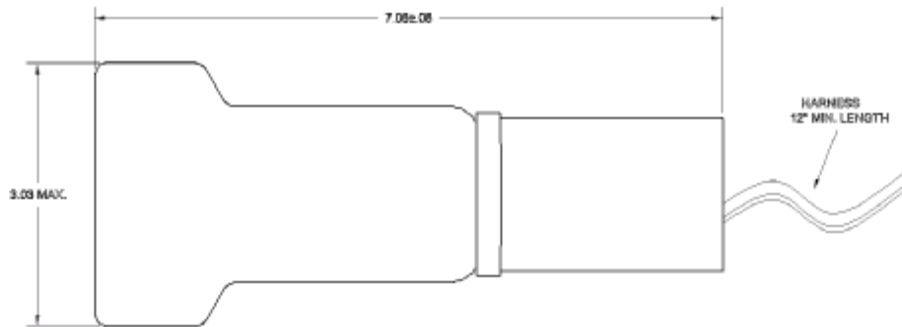


Figure 1. General Outline of 83049-542 Module.

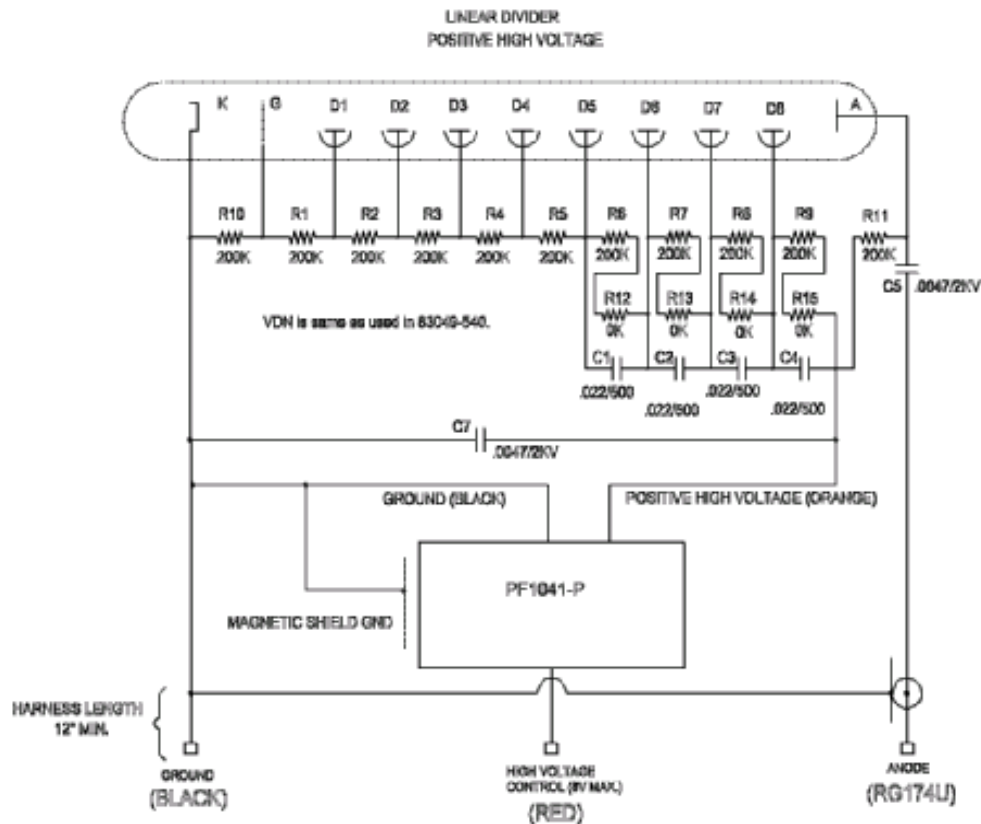
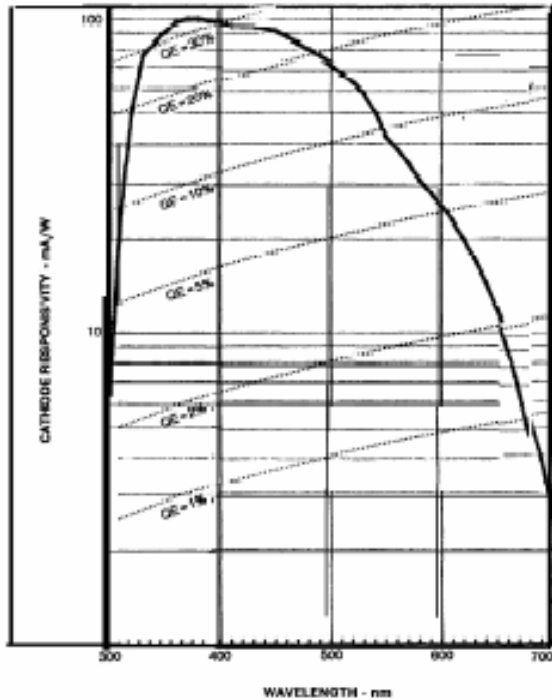


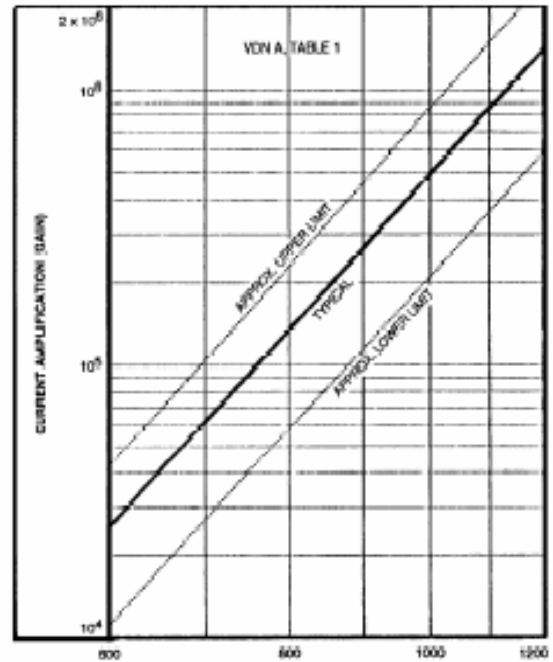
Figure 2. Electrical Schematic of VDN with PF1041 Power Supply and Attached Output Cables.

## 83049-542 Module



LB-8829

**Figure 3. 83049-542 Typical Spectral Response.**



**Figure 4. 83049-542 Typical Gain as a Function of HV Supplied by the PF1041P to the PMT.**

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