

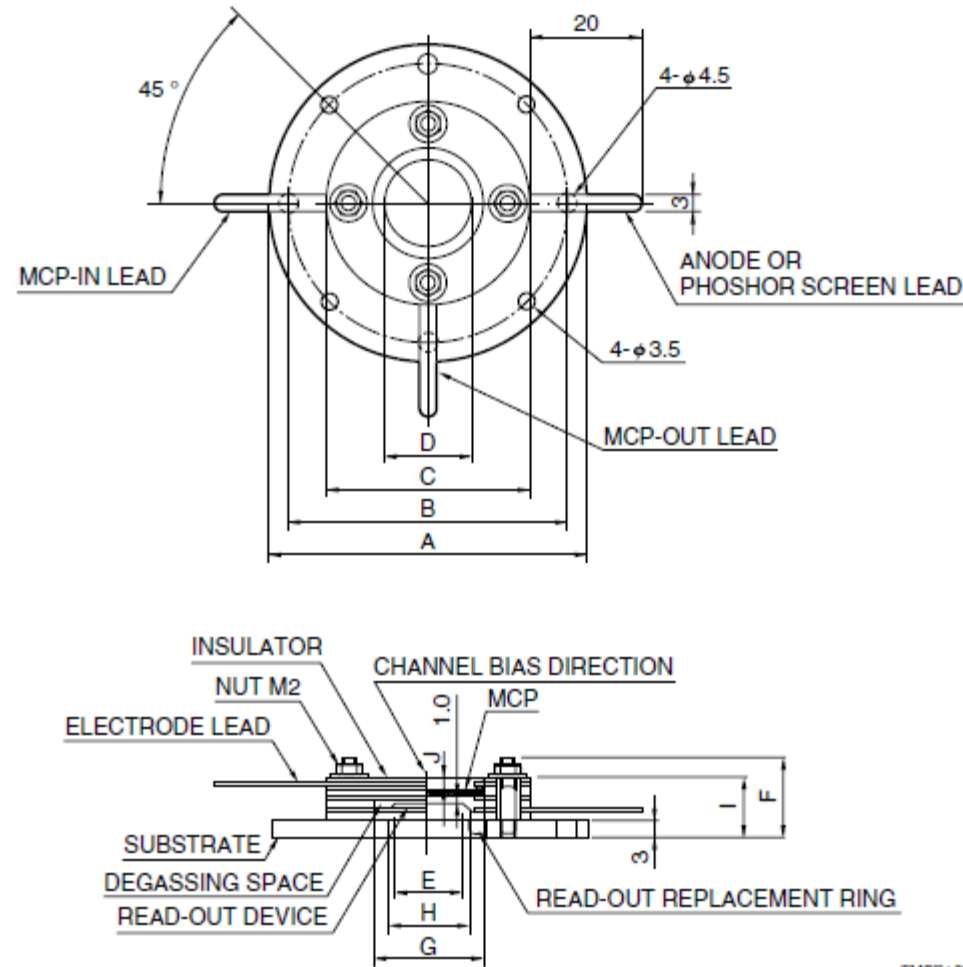
Lab Meeting

Seoul National University

18.Jan.2018

MCP & PS

- Hamamatsu 社 대리점 알에스프라임
- MCP
- Size – Assembly outer size 75 or 69
- 1stage or 2 stage
- PS
- P43, P46, P47...
- Electron, anti-proton energy, bunch, etc



TMCPA0026EF

Anode Type	No. of MCPs
Single anode	1 to 3
Multianode	1 to 3
Phosphor screen	1 to 2

Symbol	Description	F2221	F2222	F2223	F2224	F2225	F2226	Unit
A	Assembly outer size	φ54	φ61	φ69	φ75	φ86	φ123	mm
B	Mounting screw hole pitch	φ46	φ53	φ61	φ67	φ78	φ115	mm
C	Insulator outer size	φ34	φ41	φ49	φ55	φ66	φ103	mm
D	Effective area of MCP	φ14.5	φ20	φ27	φ32	φ42	φ77	mm
E	Effective area of readout device	φ10	φ17	φ24	φ30	φ40	φ75	mm
F	Maximum height	15	15	15	15	15	17	mm
G	Replacement ring screw size for readout device	M21	M28	M35	M42	M52	M89	—
H	Replacement ring inside size for readout device	φ13	φ20	φ27	φ33	φ44	φ78	mm
I	Distance from bottom of substrate to insulator surface	No. of MCPs	1	10.9			12.9	mm
			2	11.9			14.4	
			3	11.9			15.9	
J	Distance from MCP input surface to insulator surface	No. of MCPs	1	2.8			3.8	mm
			2	3.3			4.3	
			3	2.9			4.8	

* Shape may differ depending on product type number.

MCP ASSEMBLY SPECIFICATIONS

Assembly Type Type No.	Circular	Rectangular	Circular	Center Hole	Fast Response with Center Hole ^①	Compact	Compact, Fast Response ^①	Compact, Fast Response, 4 μm MCP Anode Ground ^①	Fast Response for ± Mode Detection, Floating ^①		Fast Response for ± Mode Detection, Anode Ground ^①		Phosphor Screen Output with Vacuum Flange, Viewing Port ^①	Phosphor Screen Output with Vacuum Flange, Fiber Coupling ^①	Unit
	Demountable		Non- demountable ^②	F2223-21SH	F4294-09	F4655	F4655-10	F4655-13	F9890-31 F9892-31	F9890-32 F9892-32	F9890-13 F9892-13	F9890-14 F9892-14	F2225- 21PGF	F6959	
Outer Size	φ54 to φ123	78×29.5 to 128×54	φ27 to φ62	φ56.5	φ69	φ18	φ38		F9890 series: φ81 F9892 series: φ92				φ152		mm
Effective Area	φ10 to φ75	55×8 to 81×31	φ14.5 to φ42	φ27		φ14.5		F9890 series: φ27 F9892 series: φ42				φ40	φ28	mm	
Height	15 to 17	10.9 to 12.9	4.5 to 5.7	8.6	17	8.5	31.9		64.7	64.4	33.3	32.9	60	36.1	mm
Number of MCPs	1 to 3 With Phosphor Screen: 1 to 2			2											—
MCP Center Dead Area	—			φ8	φ12	—									mm
Gain (Min.) ^③	1 stage MCP: 10 ⁴ 2 stage MCP: 10 ⁶ 3 stage MCP: 10 ⁷			10 ⁶		5 × 10 ⁷		10 ⁶							—
Pulse Height Resolution ^③ (FWHM) (Max.)	2 stage MCP: 120 3 stage MCP: 80			—		50		120	150				—		%
Dark Count (Max.) ^③	3 (2 or 3 stage MCP)							5	3						s ⁻¹ .cm ⁻²
MCP Supply Voltage ^④	1 stage MCP: 1.0 2 stage MCP: 2.0 3 stage MCP: 3.0			2.0		2.5		2.0							kV
MCP-OUT to Anode Supply Voltage ^④	Single anode: 0.5 Multianode : 0.5 Phosphor screen: 3.0 to 4.0			0.5		0.5							4.0	3.0	kV

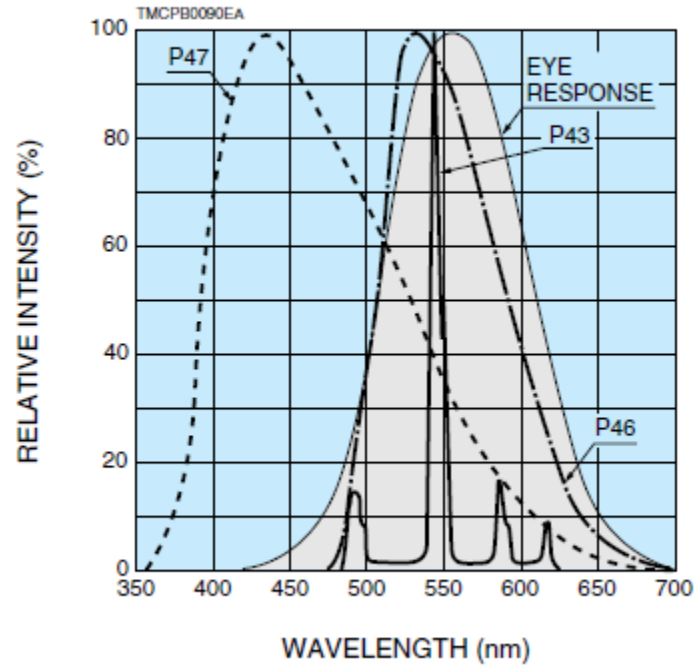
NOTE: ① Vacuum baking cannot be performed on these MCP assemblies.

② Phosphor screen type is not available.

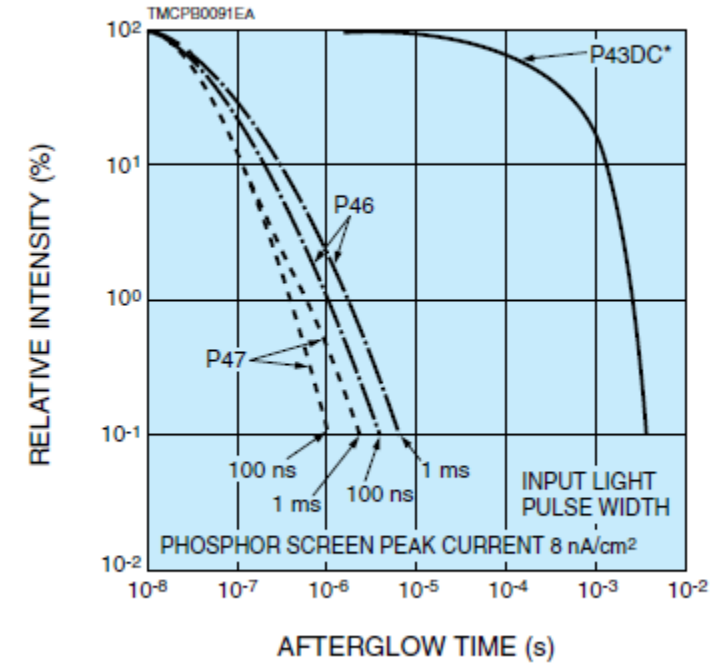
③ Supply voltage: 1.0 kV/MCP, vacuum: 1.3×10⁻⁴ Pa, operating ambient temperature: +25 °C

④ Vacuum: 1.3×10⁻⁴ Pa

■ Spectral Emission Characteristics



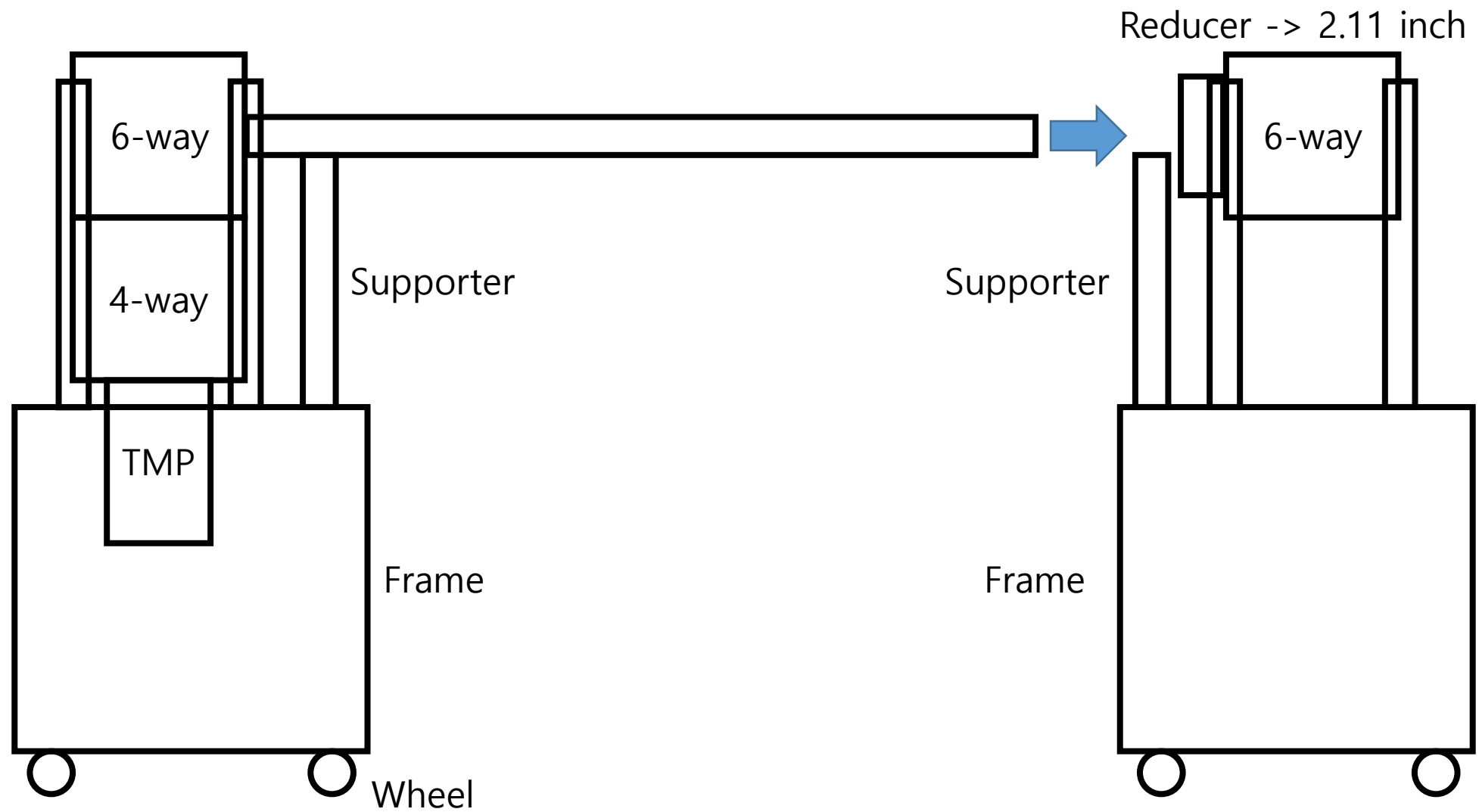
■ Afterglow Characteristics



* Afterglow characteristics after removal of continuous light input

P43, GY	Gd ₂ O ₂ S:Tb	Yellow-green	545 nm	–	Medium	CRT	Display tubes, Electronic Portal Imaging Devices (EPIDs) used in radiation therapy linear accelerators for cancer treatment
P45, WB	Y ₂ O ₂ S:Tb	White	545 nm	–	Short	CRT	Viewfinders
P46, KG	Y ₃ Al ₅ O ₁₂ :Ce	Green	530 nm	–	Very short	CRT	Beam-index tube
P47, BH	Y ₂ SiO ₅ :Ce	Blue	400 nm	–	Very short	CRT	Beam-index tube

Vacuum System Frame



Volts & Nuts & Gaskets

SUS 316, 6 inch, 2.75 inch, 2.11 inch

Spanner