



Photomultiplier Tube Modules STM1/STM2/STM3/STD



2023 V1

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Model Guide

Selection Guide for Photon Counter and Light Detector

Item	Product Name	Photocathode Area Shape	Photocathode Area Size	Wavelength (short)	Wavelength (long)	Peak Wavelength	Input Voltage	[Cathode] Luminous Sensitivity Typ.	Cathode Radiant Sensitivity	Maximum Linear Count Rate	Dark Count Typ.	Wight
STM1011	Photon Counter	Round	Dia.25mm	290nm	650nm	420nm	+4.75~+5.25V	/	/	6x10 ⁶ (Before Calibration) ,20x10 ⁶ (After correction)	80s ⁻¹	280g
STM2011							+11.5~+12.5	/	/			445g
STM2012	Photon Counting Detector	Round	Dia.22mm	290nm	650nm	420nm	+4.75~+5.25V	/	/	1x10 ⁷ (Before Calibration) ,4x10 ⁷ (After correction)	/	220g
STM2021	Light Detector	Round	Dia.22mm	290nm	650nm	420nm	±11.75~±12.25	90μA/lm	100mA/W	/	/	/
STM2031							+11.75~+12.25	/	/			/
STM2111-01	Photometric Detector	Square	8x24mm	165mm	900mm	400mm	±11.5~±12.5	250μA/lm	70mA/W	/	/	225g
STM2111-02				160mm	650nm	60μA/lm		25mA/W				

Selection Guide for β detector

Item	Product Name	Effective Shape	Effective Aarea	Input Current	Input Voltage	Output Pulse Logic	Output Pulse Amplitude	Output Pulse Width	Observed Counting Rate	1 Hour Instability Typ.
SMM1111	β detector	Round	Dia.10mm	70mA	+11.5~ + 12.5V	TTL	5±0.5V	500±100ns	8.8-9k s-1	0.20%
SMM3013			Dia.25mm	≤60mA(+12V); ≤10mA(-12V)			5±0.2V		26.5-28k s-1	

Selection Guide for Scintillator Probe and NaI Scintillator Detector

Item	Product Name	Photocathode Area Shape	Photocathode Area Size	Application voltage	Input Voltage	Interface Type	Energy Resolution	Applicable to The PMT	Output Signal Polarity	Output Signal Amplitude	Max Output Ssignal Amplitude
STM3111	Scintillator Probe	Round	Φ25×25mm	0~+1250V	/	BNC、SHV	≤8.5%	STN2013	/	/	/
STM3112			Φ50×50		/			/	/		
STM3113			Φ75×75		/			/	/		
STM3021	NaI Scintillator Detector	Round	Φ25×25mm	/	/+11.5~+12.5V	/	≤8.5%	/	Negative	1V	6V
STM3022			Φ50×50	/		/		/			
STM3023			Φ75×75	/		/		/			

Photon Counter – STM1011

The STM1011 photon counter is mainly used in biology, medicine, chemistry and other fields, mainly involving weak light detection, precision measurement.

It is mainly composed of photomultiplier tube, high voltage power supply module and signal forming circuit. Before leaving the factory, this product has been tested in all aspects, switch on the power supply, the output end and the counting unit can be connected to use. Product performance can be customized according to customer demand.



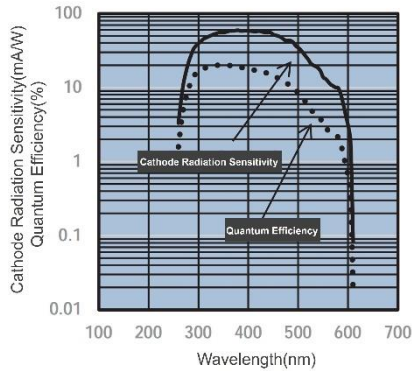
Specification

Parameter		Min.	Typ.	Max.	Unit
Input Voltage		+4.75~+5.25			V
Max Input Current		60			mA
Effective Area		Φ25			mm
Spectral Range		290-650			nm
Peak Wavelength		420			nm
Output Pulse Logic		TTL			/
Output Pulse Amplitude ⁽¹⁾		2	2.5	/	V
Pulse Pairs Resolving Time		20			ns
Radiation Counting Sensitivity	400nm	4.5×10 ⁵			s ⁻¹ ·pW ⁻¹
Maximum Linear Count Rate ⁽²⁾		6×10 ⁶ (Before Calibration)			s ⁻¹
		20×10 ⁶ (After correction)			
Dark Count ⁽³⁾		/	80	200	s ⁻¹
Consistency ⁽⁴⁾		/	/	±10	%
8 Hour Instability ⁽⁵⁾		/	0.60%	3	%
Recommended Load Resistance		50			Ω
Weight		280			g
Work Environment ⁽⁶⁾	Temperature	+5~+40			°C
	Humidity	/	/	90%RH	/
Storage Environment	Temperature	-20~+50			°C
	Humidity	/	/	93%RH	/
Test Ambient Temperature		25°C			

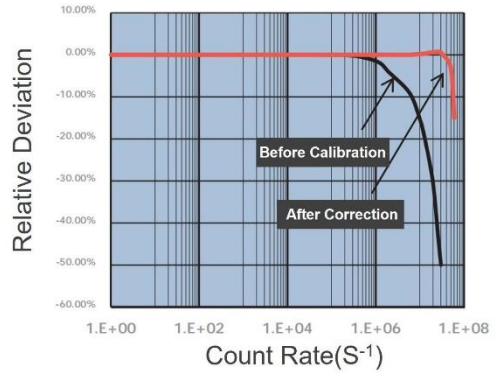
Note:

- (1) Load 50Ω
- (2) After correction, it is obtained by STM1011 with the correction function of the northern night vision counter unit
- (3) After 30 minutes of light avoidance, the room temperature was 25°C, the test was conducted for 300s, and the mean value was calculated
- (4) The light source wavelength is between 400~500nm, and the detector output counting rate is about 15ks⁻¹.
- (5) The detector output counting rate is about 30ks⁻¹
- (6) No condensation.

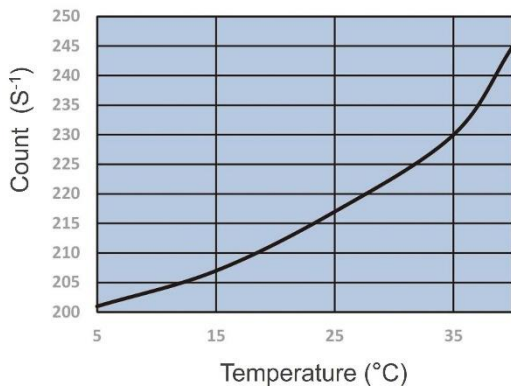
Spectral Graph



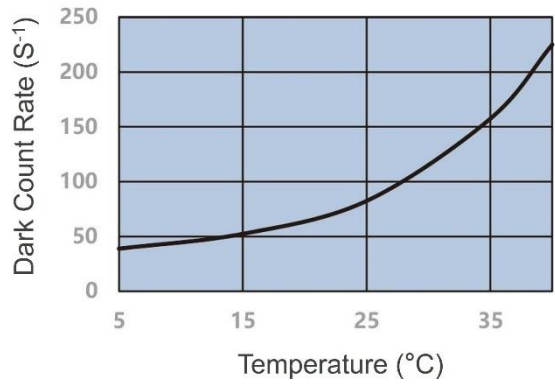
Spectral Response Curve



Count Rate Correction Curve

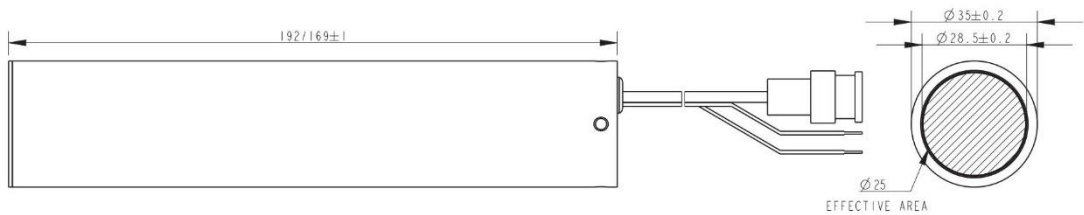


Graph of Dark Counting Rate With Temperature



Graph of Dark Count Variation With Temperature

Dimension



Brown : Power input +5V
 Blue : Power ground
 BNC is the signal cable

(unit: mm, line length can be customized)

Photon Counter – STM2011

Photon counter is mainly used in biology, medicine, chemistry and other fields, mainly involving weak light detection, precision measurement.

The STM2011 photon counting detector is mainly composed of photomultiplier tube, high voltage power supply module and signal forming circuit. Before leaving the factory, this product has been tested in all aspects, switch on the power supply, the output end and the counting unit can be connected to use. Product performance can be customized according to customer demand.



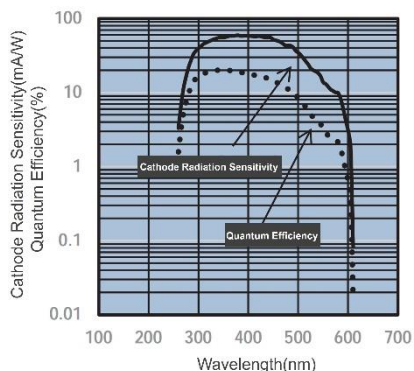
Specification

Parameter		Min.	Typ.	Max.	Unit
Input Voltage		+11.5~+12.5			V
Max Input Current		70			mA
Effective Area		Φ25			mm
Spectral Range		290-650			nm
Peak Wavelength		420			nm
Output Pulse Logic		TTL			/
Output Pulse Amplitude ⁽¹⁾		2	2.5	/	V
Pulse Pairs Resolving Time		20			ns
Radiation Counting Sensitivity	400nm	4.5×10 ⁵			s ⁻¹ ·pW ⁻¹
Maximum Linear Count Rate ⁽²⁾		6×10 ⁶ (Before Calibration)			s ⁻¹
		20×10 ⁶ (After Correction)			
Dark Count ⁽³⁾		/	80	200	s ⁻¹
Consistency ⁽⁴⁾		/	/	±10	%
8 Hour Instability ⁽⁵⁾		/	0.60%	3	%
Recommended Load Resistance		50			Ω
Weight		445			g
Work Environment ⁽⁶⁾	Temperature	+5~+40			°C
	Humidity	/	/	90%RH	/
Storage Environment ⁽⁶⁾	Temperature	-20~+50			°C
	Humidity	/	/	93%RH	/
Test ambient temperature		25°C			

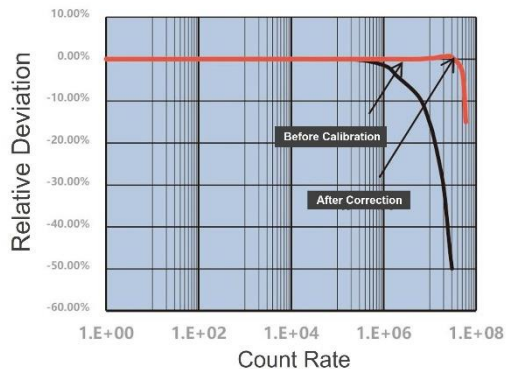
Note:

- (1) Load 50Ω
- (2) After correction, it is obtained by STM2011 with the correction function of the northern night vision counter unit.
- (3) After 30 minutes of light avoidance, the room temperature was 25°C, the test was conducted for 300s, and the mean value was calculated.
- (4) The light source wavelength is between 400~500nm, and the detector output counting rate is about 15ks⁻¹.
- (5) The detector output counting rate is about 30ks⁻¹.
- (6) No condensation.

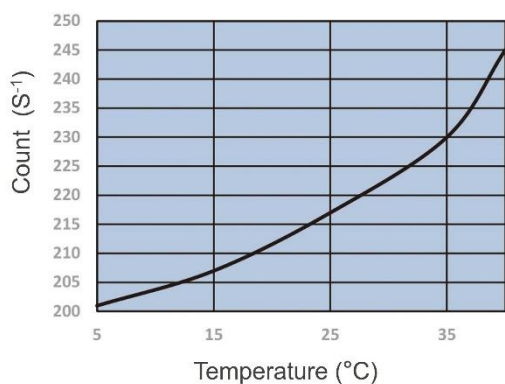
Spectral Graph



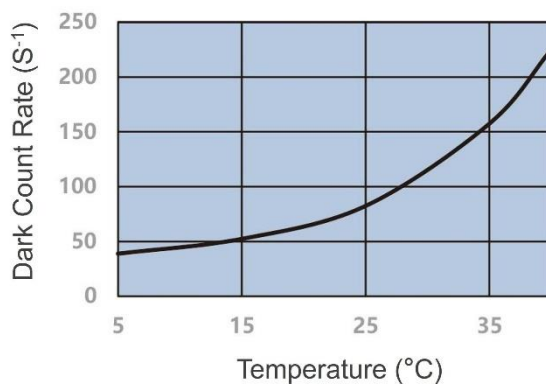
Spectral Response Curve



Count Rate Correction Curve

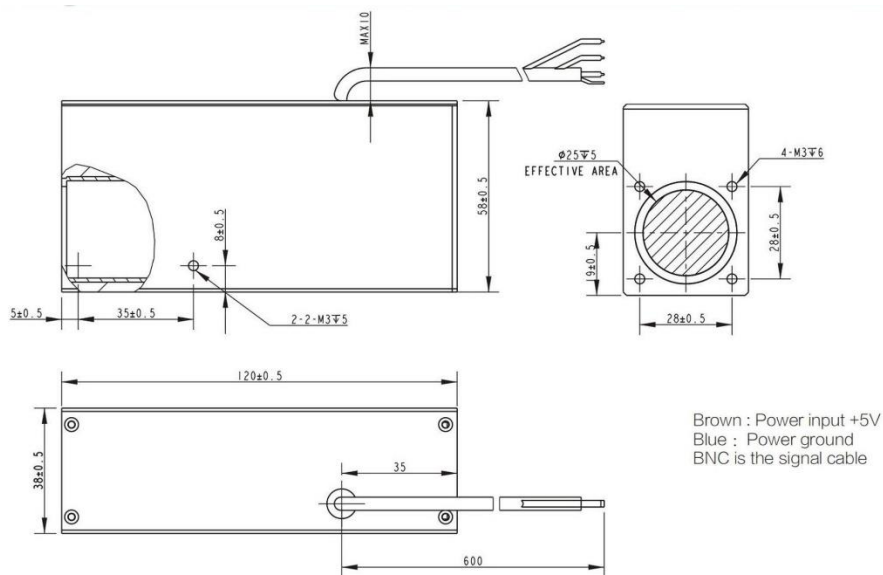


Graph of Dark Counting Rate With Temperature



Graph of Dark Count Variation With Temperature

Dimension



(unit: mm, line length can be customized)

Photon Counting Detector – STM2012

The STM2012 photon counting detector is a high sensitivity photon technology detector which is composed of head-on photomultiplier, high voltage power supply module and comparative forming circuit. Before the product leaves the factory, the parameter points has been preset as the optimal value, the user only needs to switch on the power supply, the output terminal and the counter can be used.



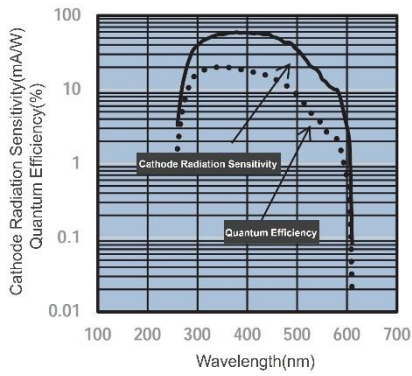
Specification

Paramater		Min.	Typ.	Max.	Unit
Input Voltage		+4.75~+5.25			V
Max Input Current		100			mA
Effective Area		Φ22			mm
Spectral Range		290-650			nm
Peak Wavelength		420			nm
Output Pulse Logic		+TTL			/
Output Pulse Amplitude ⁽¹⁾			2.2	2.5	V
Sensitivity of Counting	400nm	4.5×10 ⁵			s ⁻¹ ·pW ⁻¹
Maximum Linear Count Rate ⁽²⁾		1.0×10 ⁷ (Before Calibration)			s ⁻¹
		4.0×10 ⁷ (After Correction)			
Dark Noise ⁽³⁾			100	200	s ⁻¹
8 Hour Instability ⁽⁴⁾		1%			%
Pulse Pair Resolution Time		17			ns
Recommended Load Resistance		50			Ω
Weight		220			g
Work Environment	Temperature	+5~+40			°C
	Humidity	Max.	90%RH		/
Storage Environment	Temperature	-20~+50			°C
	Humidity	Max.	93%RH		/
Test Ambient Temperature		25°C			

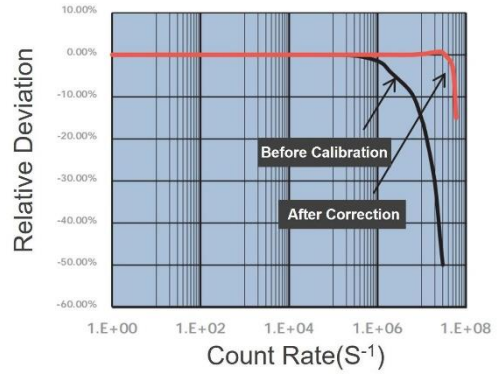
Note:

- (1) Load 50Ω
- (2) Random pulse; STM2012 income before correction; After correction, it is obtained by STM2012 cooperating with the correction function of counter unit STM4011
- (3) Test after 30min of light avoidance
- (4) The detector output counting rate is about 30k/s.

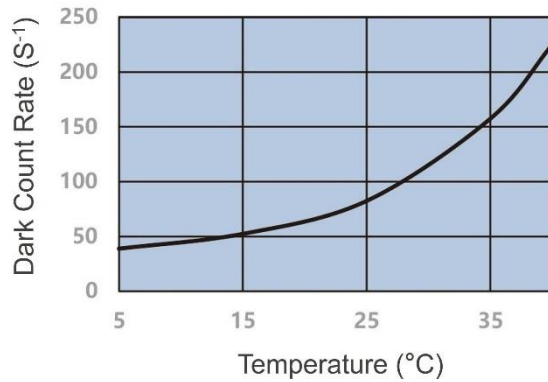
Spectral Graph



Spectral Response Curve

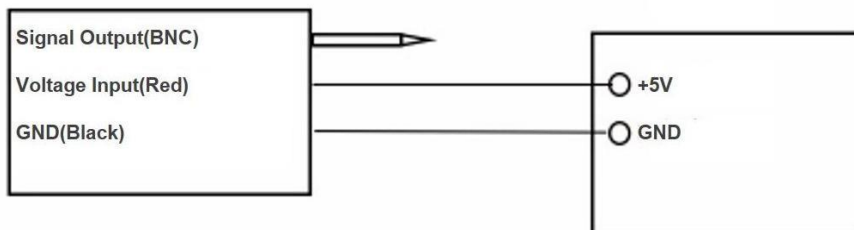
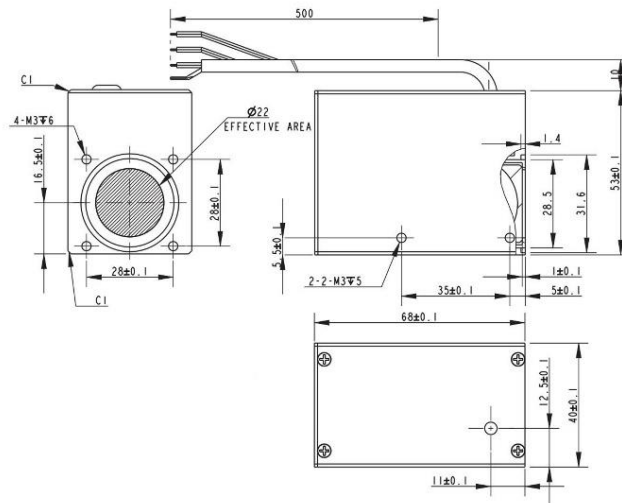


Count Rate Correction Curve



Graph of dark counting rate with temperature

Dimension



Light Detector – STM2021

The STM2021 light detector is composed of head-on photomultiplier tube, power supply circuit and amplifier circuit.

The current signal output by the photomultiplier tube is changed into a voltage output signal after I-V amplification. The gain of the light detector can be controlled by resistance adjustment or voltage adjustment.



Specification

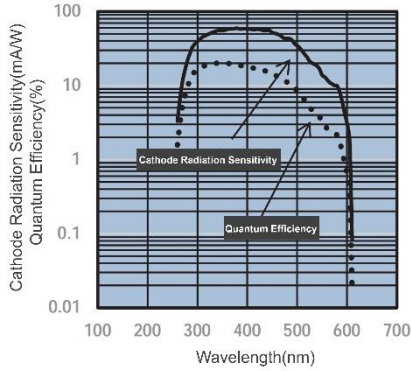
Parameter		Description/Value	Unit
Input Voltage		$\pm 11.75 \sim \pm 12.25$	V
Max Input Current		150	mA
Effective Area		$\Phi 22$	mm
Spectral Range		290-650	nm
Peak Wavelength		420	nm
Remommend Control Voltage		+2~+4.5 (Impedance 10k Ω)	V
Cathode Luminous Sensitivity ⁽¹⁾		90	$\mu\text{A}/\text{lm}$
Cathode Radiant Sensitivity ⁽¹⁾		100	mA/W
Anode Radiant Sensitivity ⁽¹⁾		2×10^5	A/W
Frequency Bandwidth		DC to 20	kHz
Current to Voltage Conversion Fator		1	$\text{V}/\mu\text{A}$
Max Linear Output Voltage ⁽¹⁾		5	V
Ripple Noise ⁽¹⁾⁽²⁾		4	mV
Weight		220	g
Work Environment	Temperature	+5~+40	$^{\circ}\text{C}$
	Humidity	Max. 90%RH	/
Storage Environment	Temperature	-10~+50	$^{\circ}\text{C}$
	Humidity	Max. 93%RH	/
Test Ambient Temperature		25 $^{\circ}\text{C}$	

Note:

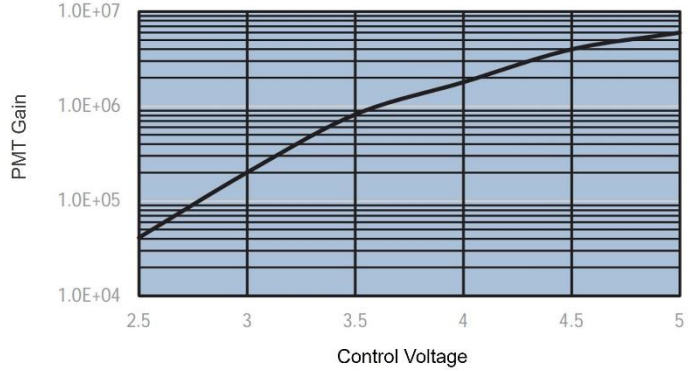
(1) Control voltage +4V.

(2) Load resistance 1M Ω , capacitance 22pF test.

Spectral Graph

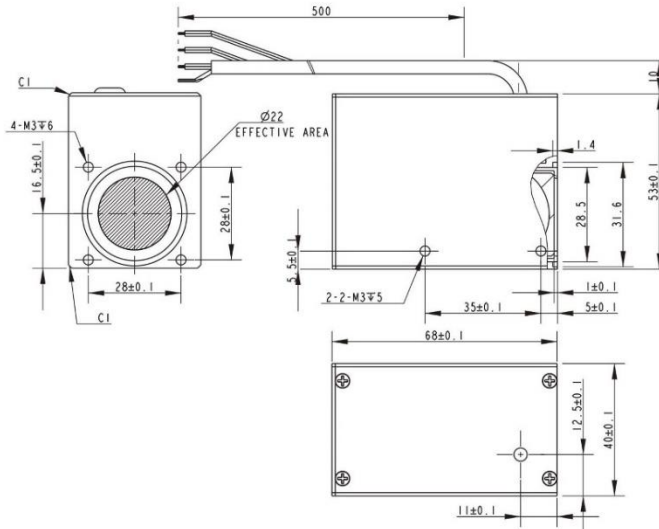


Spectral Response Curve



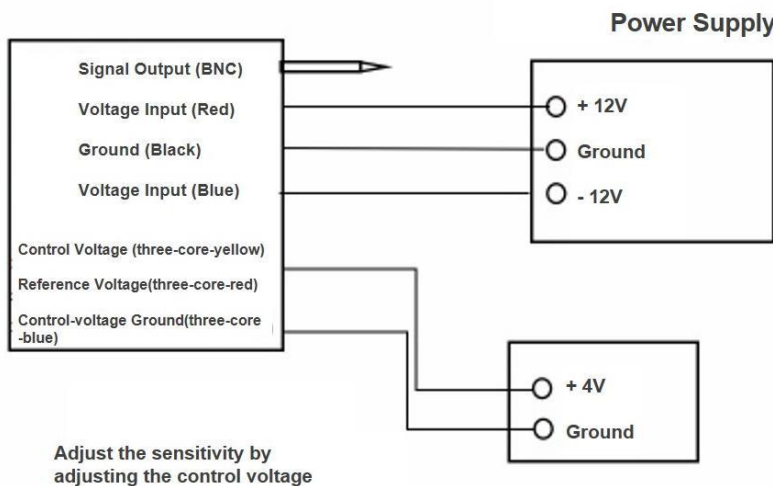
The Gain Varies With the Control Voltage

Dimension



(unit: mm, line length can be customized)

Wiring and Gain Adjustment Method



Adjust the sensitivity by adjusting the control voltage

Sensitivity(gain) adjustment method

Light Detector – STM2031

The STM2031 light detector is composed of head-on photomultiplier tube and power supply circuit.

The light detector directly outputs the current signal, and the gain can be controlled by resistance regulation or voltage regulation.



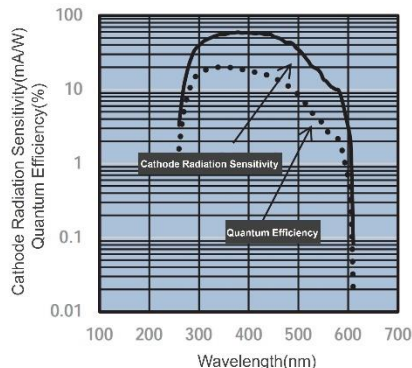
Specification

Parameter		Description/Value	Unit	
Input Voltage		+11.75~+12.25	V	
Max Input Current		150	mA	
Effective Area		Φ22	mm	
Spectral Range		290-650	nm	
Peak Wavelength		420	nm	
Max.Average Output Signal Current		100	μA	
Remommend Control Voltage		+2~+4.5(Impedance10kΩ)	V	
Cathode Luminous Sensitivity ⁽¹⁾		90	μA/lm	
Cathode Radiant Sensitivity ⁽¹⁾		100	mA/W	
Anode Radiant Sensitivity ⁽¹⁾		2×10 ⁵	A/W	
Dark Current ⁽²⁾		10	nA	
Ripple Noise ^{(1) (3)}		4	mV	
Weight		220	g	
Work Environment	Temperature		+5~+40	°C
	Humidity	Max.	90%RH	/
Storage Environment	Temperature		-10~+50	°C
	Humidity	Max.	93%RH	/
Test ambient temperature		25°C		

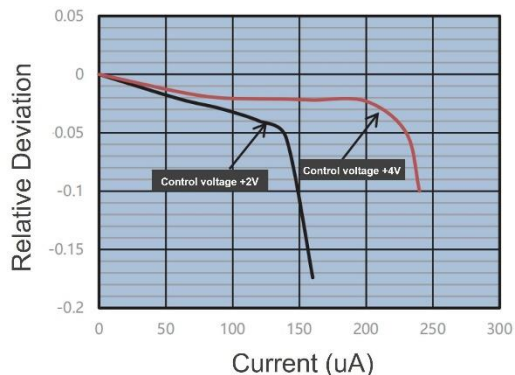
Note:

- (1) Control voltage +4V.
- (2) Test after 30min of light avoidance.
- (3) Load resistance 1MΩ, capacitance 22pF test

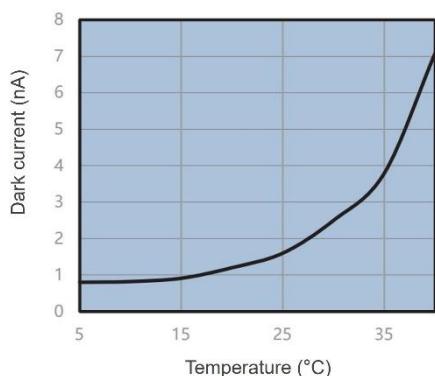
Spectral Graph



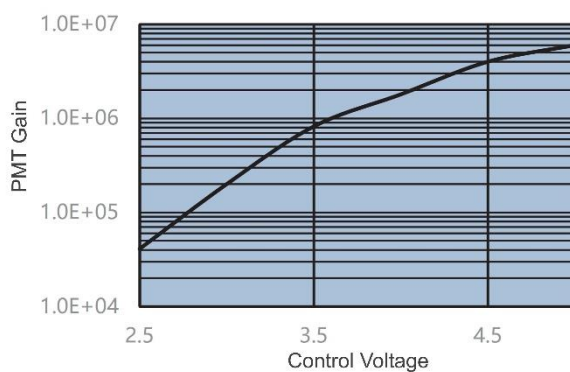
Spectral Response Curve



Output Current Linearity

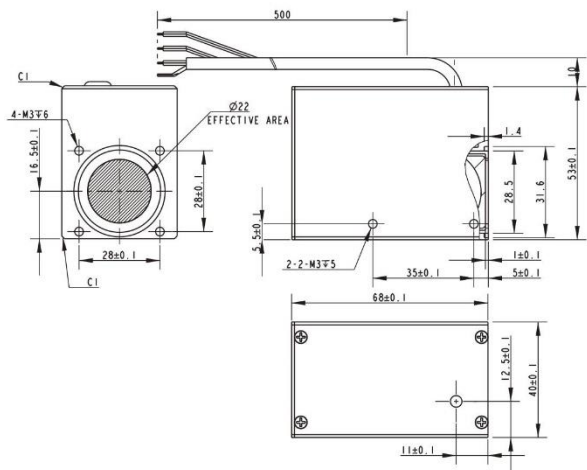


Dark Current Temperature Characteristic Curve

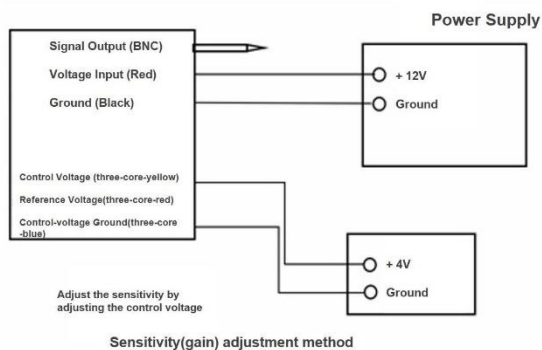


The Gain Varies With the Control Voltage

Dimension



Wiring and Gain Adjustment Method



(unit: mm, line length can be customized)

Photometric Detector – STM2111

The STM2111 photometric detector is mainly used in high energy physics, vitro diagnosis, precision measurement and other fields.

STM2111 photometric detector consists of side window photomultiplier tube, high voltage power supply module and amplifier circuit. The product has the advantages of simple and convenient, high reliability and high detection efficiency, and can be controlled by multiple ways (voltage regulation or resistance regulation) gain.



Specification

Paramater			M2111-01	M2111-02	Unit
Input Voltage			±11.5~±12.5		V
Max Input Current			100		mA
Effective Area			8×24		mm
Spectral Range			165-900	160-650	nm
Peak Wavelength of Radiant Sensitivity			420	400	nm
Control Voltage			+2~+5		V
Cathode Luminous Sensitivity			250	60	μA/lm
Cathode Radiant Sensitivity ⁽²⁾			70	25	mA/W
Output Luminous Sensitivity ⁽¹⁾			1.2×10 ⁷	4×10 ⁶	V/lm
Output Ardiant Sensitivity ⁽¹⁾⁽²⁾			3.5	1.7	V/nW
Red and White Ratio			0.3	/	/
IV Conversion Ratio			0.05		V/μA
Maximum Linear Output Voltage ⁽¹⁾			5		V
Offset Voltage ⁽¹⁾⁽³⁾			±2		mV
Ripple Noise			4		mV
Frequency Bandwidth			500		kHz
Weight			225		g
Work Environment	Temperature		+5~+40		°C
	Humidity	Max.	90%RH		/
Storage Environment	Temperature		-20~+50		°C
	Humidity	Max.	93%RH		/
Test Ambient Temperature			25°C		

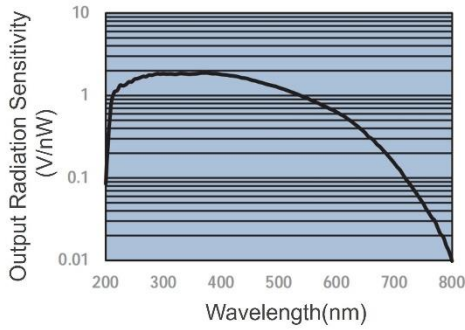
Note:

(1) Control voltage: +4.0V.

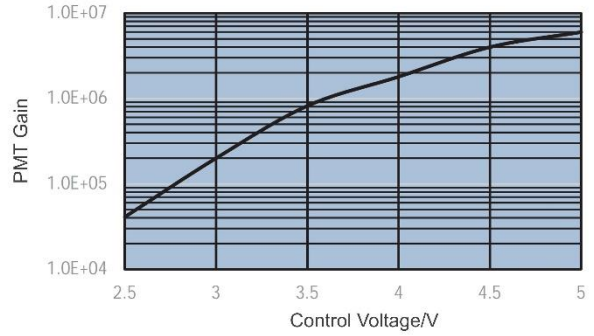
(2) Wavelength of incident light: 400nm.

(3) Preheating time: 30min

Spectral Graph



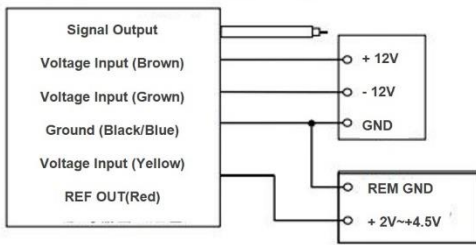
Spectral Response Curve



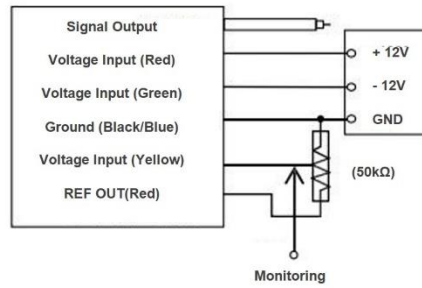
The Gain Varies With the Control Voltage

Wiring and Gain Adjustment Method

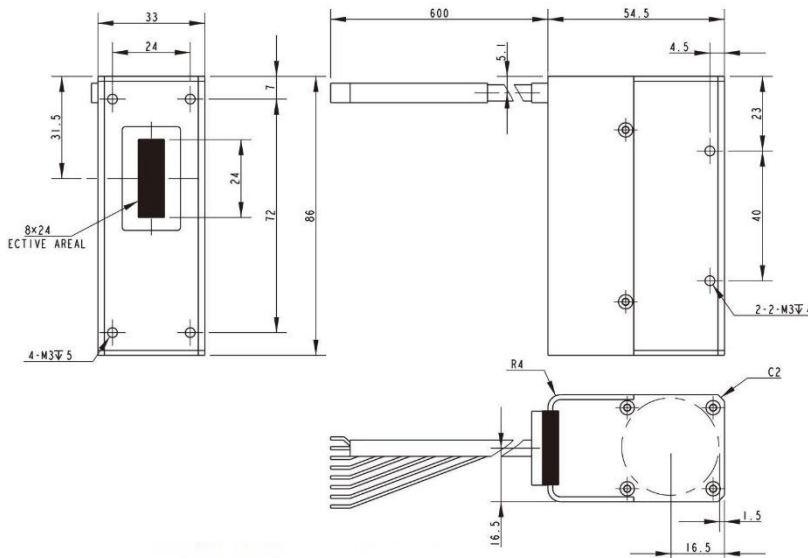
Voltage Regulation Reference output should be suspended



Resistance Adjustment (Control input needs to be monitored)



Dimension



(unit: mm, line length can be customized)

β Detector – STM1111

The STM1111 β detector can measure low energy β ray, because of its excellent anti-interference ability, can be widely used in environmental detection, precision measurement, scientific research and other fields. It is mainly composed of photo multiplier, high voltage power supply module, signal forming circuit and scintillator .

STM1111 β detector has the advantages of simplicity, high reliability and high detection efficiency . Before leaving the factory, it has been tested in all aspects, connected to the power supply, the output end can be used with the counting unit.



Specification

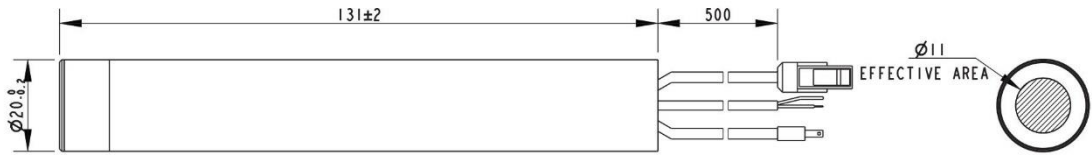
Parameter		Min.	Typ.	Max.	Unit
Input Voltage		+11.5~ + 12.5			V
Max Input Current		/	/	70	mA
Effective Area		Φ10			mm
Output Pulse Logic		+TTL			/
Output Pulse Amplitude		5±0.5			V
Output Pulse Width		500±100			ns
Background Counting Rate		/	/	3	s ⁻¹
Observed Counting Rate ⁽¹⁾		8.8-9k			s ⁻¹
1 Hour Instability ⁽²⁾		/	0.2	0.4	%
Work Environment	Temperature	/	+5~+40	/	/
	Humidity	/	/	90%RH	/
Storage Environment	Temperature	-20~+50			°C
	Humidity	/	/	93%RH	/
Test Ambient Temperature		25°C			

Note:

(1) Test with a 60μ Ci¹⁴C source 3mm from the detector.

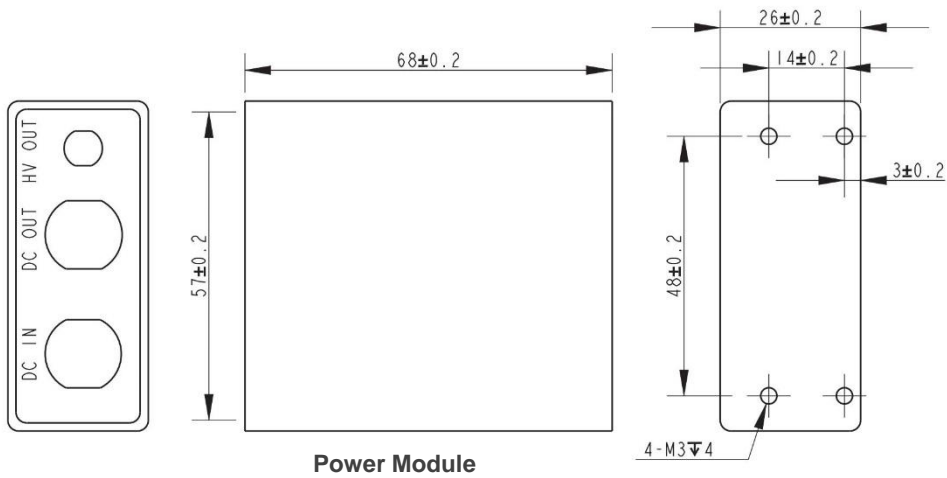
(2) 1-hour instability test process: The count rate of detector acquisition was 10.0±0.5ks⁻¹, the collection time of each data was set as 4min, and 15 data were collected cumulatively (1 hour) for each set of data. The absolute value of deviation between each value of each set of data and the mean value was calculated, and the three groups were tested continuously (3 hours). The maximum value of the three groups was the 1-hour operating instability test value. The maximum value is the one-hour operating instability test value . The maximum value is the 1-hour operating instability test value.

Dimension



BNC: Signal line;
 Lemo: high voltage line;
 red: +12V;
 blue: ground

Probe



Power Module

(unit: mm, line length can be customized)

β Detector – STM3013

The STM3013 β detector can measure low energy β ray, because of its excellent anti-interference ability, can be widely used in environmental detection, precision measurement, scientific research and other fields. It is mainly composed of end window photomultiplier, high voltage power supply module, signal forming circuit, scintillator and so on.

The product has the advantages of simplicity, high reliability and high detection efficiency. Before leaving the factory, it has been tested in all aspects, connected to the power supply, and the output end can be used with the counting unit.



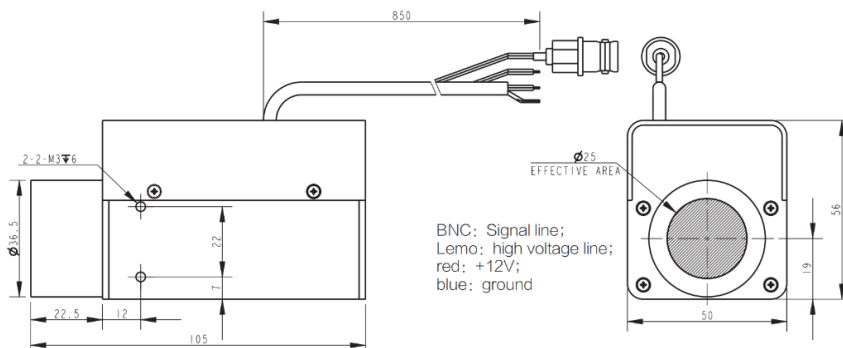
Specification

Paramater		Min.	Typ.	Max.	Unit
Input Voltage		±11.5~±12.5			V
Max Input Current		≤60(+12V); ≤10(-12V)			mA
Effective Area		Φ25			mm
Output Pulse Logic		TTL			/
Output Pulse Amplitude		5±0.2			V
Output Pulse Width		500±100			ns
Background Counting Rate		/	/	3	s ⁻¹
Observed Counting Rate ⁽¹⁾		26.5-28k			s ⁻¹
1 Hour Instability ⁽²⁾		/	0.2	0.4	%
Work Environment	Temperature	+5~+40			°C
	Humidity	Max.	90%RH		/
Storage Environment	Temperature	-20~+50			°C
	Humidity	Max.	93%RH		/
Test Ambient Temperature		25°C			

Note:

- (1) Test with a 60μCi ¹⁴C source 3mm from the detector.
- (2) 1-hour instability test process: The count rate of detector acquisition was 6.0±0.5ks, the collection time of each data was set to 4min, and 15 data were collected cumulatively (1 hour) for each set of data. The absolute value of deviation between each value of each set of data and the mean value was calculated. The three groups were tested continuously (3 hours), and the maximum value of the three groups was taken as the 1-hour operating instability test value.

Dimension



(unit: mm, line length can be customized)

Scintillator Probe – STM3111

The STM3111 scintillator probe is composed of NaI scintillator, photomultiplier tube.

Due to its outstanding energy resolution, high optical yield, simple use and high reliability, it is widely used in industrial detection, radiology, X-ray fluorescence analysis, oil well detection and other fields.

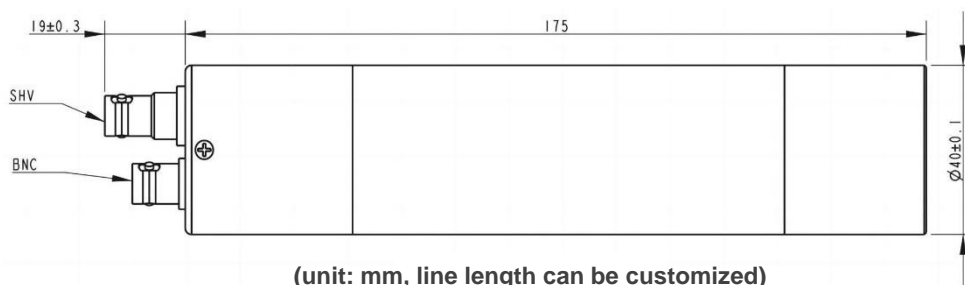


Specification

Paramater		Range	Unit
Application Voltage		0~+1250	V
PMT Diameter		1	Inch
Applicable to the PMT		STN2013	/
Effective Size of Scintillator		Φ25×25	mm
Interface Type		BNC、SHV	/
Energy Resolution ⁽¹⁾		≤8.5	%
Work Environment	Temperature	0~+40	°C
	Humidity	≤90%RH	/
Storage Environment	Temperature	-20~+50	°C
	Humidity	≤93%RH	/
Test Ambient Temperature		25°C	

Note:(1)The output state of the detector is adjusted by using ¹³⁷Cs radioactive source test.

Dimension



Wiring

Wiring Instructions		
Interface Type	SHV Interface	BNC Interface
Interface Definition	+12V Power Supply	Signal Interface

Scintillator Probe – STM3112

The STM3112 scintillator probe is composed of NaI scintillator, photomultiplier tube.

Due to its outstanding energy resolution, high optical yield, simple use and high reliability, it is widely used in industrial detection, radiology, X-ray fluorescence analysis, oil well detection and other fields.

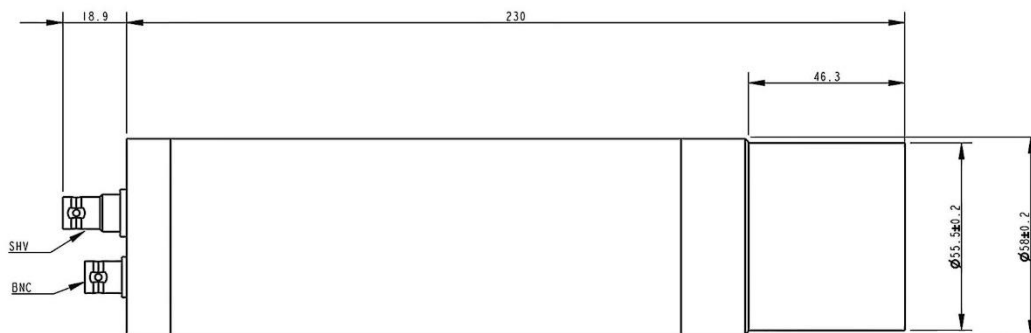


Specification

Paramater		Range	Unit
Application Voltage		0~+1250	V
PMT Diameter		2	Inch
Applicable to the PMT		STN4021	/
Effective Size of Scintillator		Φ50×50	mm
Interface Type		BNC、SHV	/
Energy Resolution ⁽¹⁾		≤8.5	%
Work Environment	Temperature	0~+40	°C
	Humidity	≤90%RH	/
Storage Environment	Temperature	- 20~+50	°C
	Humidity	≤93%RH	/
Test Ambient Temperature		25°C	

Note:(1)The output state of the detector is adjusted by using ¹³⁷Cs radioactive source test.

Dimension



(unit: mm, line length can be customized)

Wiring

Wiring Instructions		
Interface Type	SHV Interface	BNC Interface
Interface Definition	+12V Power Supply	Signal Interface

Scintillator Probe – STM3113

The STM3113 scintillator probe is composed of NaI scintillator, photomultiplier tube.

Due to its outstanding energy resolution, high optical yield, simple use and high reliability, it is widely used in industrial detection, radiology, X-ray fluorescence analysis, oil well detection and other fields.

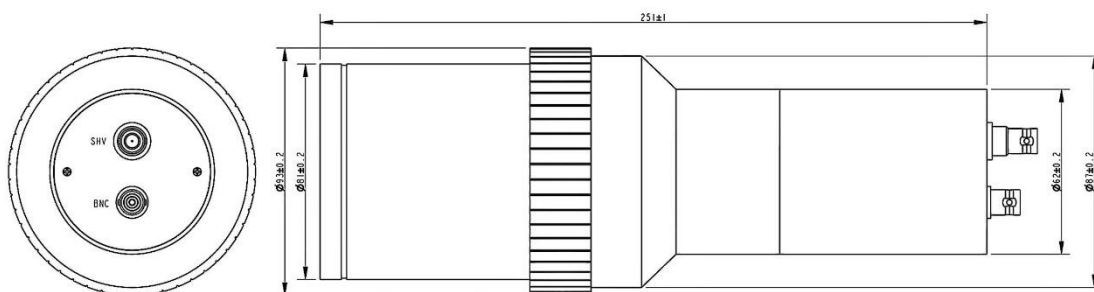


Specification

Paramater		Range	Unit
Application Voltage		0~+1250	V
PMT Diameter		3	Inch
Applicable to the PMT		STN2032	/
Effective Size of Scintillator		Φ75×75	mm
Interface Type		BNC、SHV	/
Energy Resolution ⁽¹⁾		≤8.5	%
Work Environment	Temperature	0~+40	°C
	Humidity	≤90%RH	/
Storage Environment	Temperature	- 20~+50	°C
	Humidity	≤93%RH	/
Test Ambient Temperature		25°C	

Note:(1)The output state of the detector is adjusted by using ¹³⁷Cs radioactive source test.

Dimension



(unit: mm, line length can be customized)

Wiring

Wiring Instructions		
Interface Type	SHV Interface	BNC Interface
Interface Definition	+12V Power Supply	Signal Interface

Nal Scintillator Detector – STM3021

The STM3021 Nal scintillator detector is a highly integrated detector composed of Nal scintillator, photomultiplier tube, high voltage module, preamplifier and so on.

Because of its characteristics of good energy resolution, high light yield, simple use and high reliability, it is widely used in industrial detection, radiation medicine, X-ray fluorescence analysis, oil well detection and other fields .

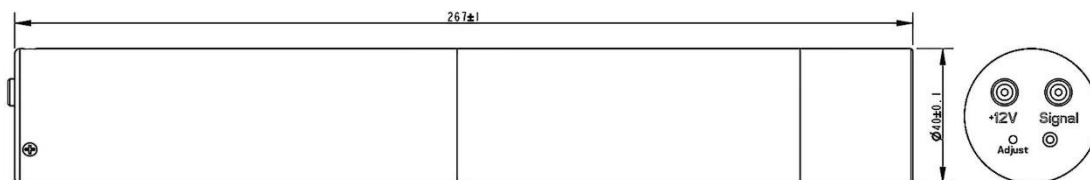


Specification

Paramater		Range	Unit
Input Voltage		+11.5~+12.5	V
Max.Input Current		50	mA
Effective Size of Scintillator		Φ25×25	mm
Output Signal Polarity		Negative	/
Output Signal Amplitude ⁽¹⁾		1	V
Output Signal Amplitude		6	V
Energy Resolution		≤8.5	%
Work Environment	Temperature	0~+40	℃
	Humidity	≤90%RH	/
Storage Environment	Temperature	-20~+50	℃
	Humidity	≤93%RH	/
Test Ambient Temperature		25℃	

Note: (1)The output state of the detector is adjusted by using ¹³⁷Cs radioactive source test.

Dimension



(unit: mm, line length can be customized)

Wiring

Wiring Instructions		
Interface Type	LEMO Power Interface	LEMO Signal Interface
Interface Definition	+12V Input	Signal Input
Wiring	LEMO Interface Power Cable	LEMO Interface Signal Cable

Note: The potentiometer adjustment interface is used to adjust the internal high voltage, adjust the high voltage clockwise to increase, and adjust the high voltage counterclockwise to decrease.

Nal Scintillator Detector – STM3022

The STM3022 Nal scintillator detector our company is a highly integrated detector composed of Nal scintillator, photomultiplier tube, high voltage module, preamplifier and so on.

Because of its characteristics of good energy resolution, high light yield, simple use and high reliability, it is widely used in industrial detection, radiation medicine, X-ray fluorescence analysis, oil well detection and other fields .

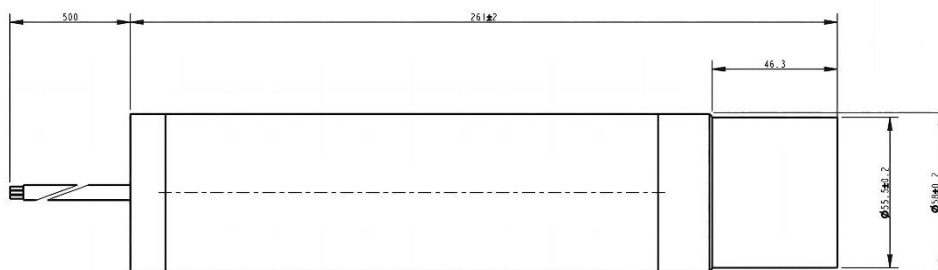


Specification

Paramater		Range	Unit
Input Voltage		+11.5~+12.5	V
Max.Input Current		50	mA
Effective Size of Scintillator		Φ50×50	mm
Output Signal Polarity		Negative	/
Output Signal Amplitude ⁽¹⁾		1	V
Output Signal Amplitude		6	V
Energy Resolution		≤8.5	%
Work Environment	Temperature	0~+40	°C
	Humidity	≤90%RH	/
Storage Environment	Temperature	-20~+50	°C
	Humidity	≤93%RH	/
Test Ambient Temperature		25°C	

Note: (1)The output state of the detector is adjusted by using ¹³⁷Cs radioactive source test.

Dimension



(unit: mm, line length can be customized)

Wiring

Wiring Instructions					
Cable Color	Red Cable	Black Cable	Green Cable	Yellow Cable	Shielding
Wiring Definition	+12V Input	Power Ground	Signal Ground	Signal Output	Grounding

Note: The potentiometer adjustment interface is used to adjust the internal high voltage, adjust the high voltage clockwise to increase, and adjust the high voltage counterclockwise to decrease.

Nal Scintillator Detector – STM3023

The STM3023 Nal scintillator detector is a highly integrated detector composed of Nal scintillator, photomultiplier tube, high voltage module, preamplifier and so on.

Because of its characteristics of good energy resolution, high light yield, simple use and high reliability, it is widely used in industrial detection, radiation medicine, X-ray fluorescence analysis, oil well detection and other fields .

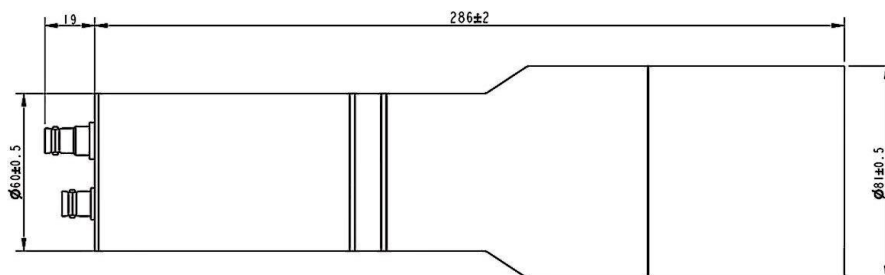


Specification

Paramater		Range	Unit
Input Voltage		+11.5~+12.5	V
Max.Input Current		50	mA
Effective Size of Scintillator		Φ75×75	mm
Output Signal Polarity		Negative	
Output Signal Amplitude ⁽¹⁾		1	V
Output Signal Amplitude		6	V
Energy Resolution		≤8.5	%
Work Environment	Temperature	0~+40	℃
	Humidity	≤90%RH	/
Storage Environment	Temperature	-20~+50	℃
	Humidity	≤93%RH	/
Test Ambient Temperature		25℃	

Note: (1)The output state of the detector is adjusted by using ¹³⁷Cs radioactive source test.

Dimension



(unit: mm, line length can be customized)

Wiring

Wiring Instructions		
Interface Type	7-pin Interface	BNC Interface
Interface Definition	+12V Input	Signal Input
Wiring	7-pin Connector Power Cable	BNC Connector Signal Cable

Note: The potentiometer adjustment interface is used to adjust the internal high voltage, adjust the high voltage clockwise to increase, and adjust the high voltage counterclockwise to decrease.

Counting Unit – STM4011

The M4011 counting unit includes counting control circuit and upper computer acquisition software. The counting unit can be used directly in combination with a photon counting detector or scintillation detector as a counter. The counting software has a simple and easy user interface.

Feature

- Count the positive logic TTL level pulses and input them to the computer through RS-232 interface
- Gating time is adjustable
- Built-in linear correction program (for use with photon counting detectors)
- Serial port baud rate: 19200 (1 bit start bit, 8 bit data bit, 1 bit stop bit, no check bit)

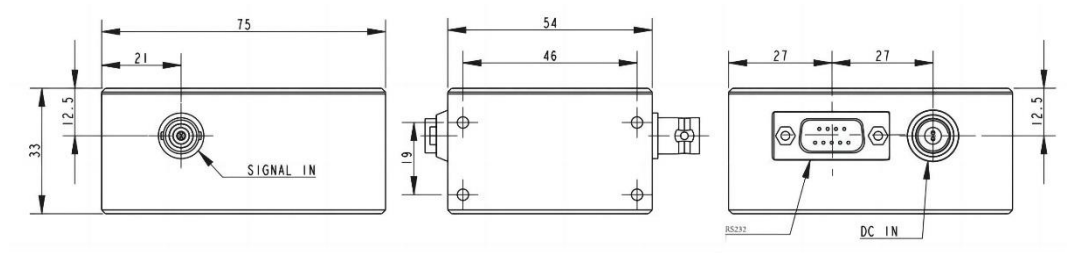


Specification

Parameter		Description
Input	Input Channel	Channel 1
	Input Signal Level	3.3VTTL (Compatible with 5VTTL levels)
	Signal Pulse Width	≥10ns
	Input Impedance	50Ω
Count	Count Mode	Gating
	Maximum Counting Rate	$5 \times 10^7 \text{S}^{-1}$
	Maximum Counting Value	232
Gating	Gated Time Range	10~655350ms
Pulse Resolution Time ⁽¹⁾		0~255ns
Input Voltage		+11.5~+12.5V
Interface		RS232
System		WindowsXP/7/10
Work Environment	Temperature	0~+40°C
	Humidity	≤90%RH
Storage Environment	Temperature	-20~+50°C
	Humidity	≤93%RH

Note: (1) The pulse pair resolution time needs to be tested against the matched detector performance.

Dimension



(unit: mm, line length can be customized)

Wiring

Wiring Instructions			
Interface Type	2-pin Interface	BNC Interface	DB9 Female
Interface Definition	+12V Input	Signal Input	Signal Output
Wiring	2-pin Connector Power Cable		

Note: The potentiometer adjustment interface is used to adjust the internal high voltage, adjust the high voltage clockwise to increase, and adjust the high voltage counterclockwise to decrease

High Voltage Tube Socket for Side Window – STD317-11

The high voltage tube socket uses $\pm 15V$ voltage input, 50k Ω potentiometer or 0-5V voltage control, easy to use and convenient. The main feature is that the built-in voltage divider adopts active voltage divider design, which can make the photomultiplier tube have high DC output linearity.

This product is suitable for side-on photomultiplier tube, which has the advantages of high linear DC output, wide output voltage range, fast response speed, low ripple noise and so on.



Specification

Parameter	Description	Unit
Suitable Photomultiplier Tube	Side-on PMT	/
Input Voltage	+15 \pm 1	V
Input Current ⁽¹⁾	80(Max)	mA
Output Voltage	0~-1250	V
Voltage Control Mode	0~+5V or 50K Ω Potentiometers	/
Reference Voltage	5.33	V
The PMT Outputs A Linear Current Value ⁽¹⁾ (-1000V)	180(Typ)	μ A
Input Regulation	0.01(Typ)	%
On-off Transient Response Rise Time ⁽²⁾	80(Typ)	ms
Temperature Coefficient	0.03(Typ)	%/ $^{\circ}$ C
Anodic Output Ripple (Peak-to-Peak) ⁽³⁾	2	mV
Operating Temperature	0~+40	$^{\circ}$ C
Operating Humidity	\leq 70%	/

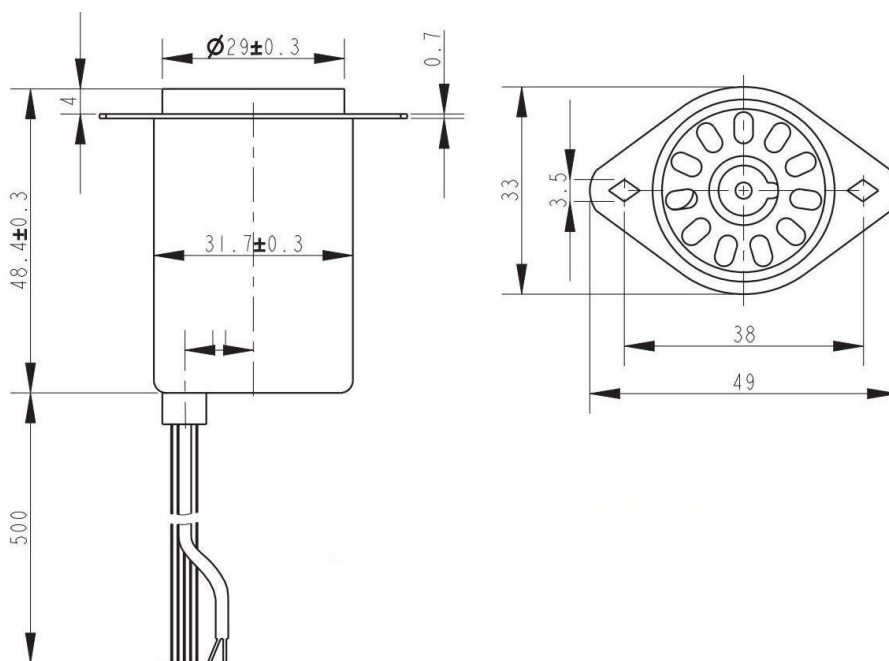
Note:

(1) Linear current variation is less than 2%

(2) High voltage change 0~99%

(3) Test bandwidth 20MHz, load resistance 1M Ω

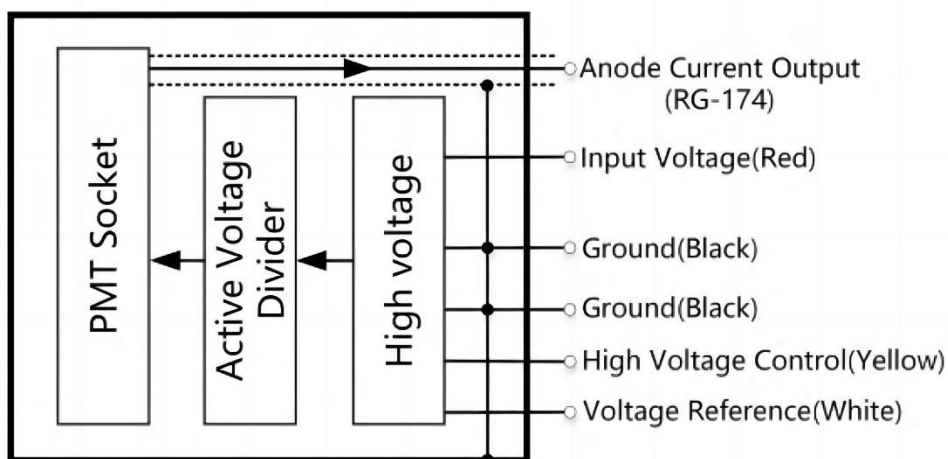
Dimension



(unit: mm, line length can be customized)

Wiring

Cable	Voltage Control	Resistance Control
Red Line	+15V Input	+15V input
Yellow Line	0~5V Control Voltage	Potentiometer Center Tap
White Line	Vacant	Potentiometer End
Black Line	Ground	Ground
Black Line	Ground	Ground
Shielded Wire	Signal Output	



High Voltage Tube Socket – STD701A-14

The STD701A-14 high voltage tube socket uses $\pm 15V$ voltage input, 50k Ω potentiometer or 0-6V voltage control, easy to use and convenient.

The main feature is that the built-in voltage divider adopts active voltage divider design, which can make the photomultiplier tube have high DC output linearity. This product is suitable for N2013 photomultiplier tube, which has the advantages of high linear DC output, wide output voltage range, fast response speed, low ripple noise and so on.



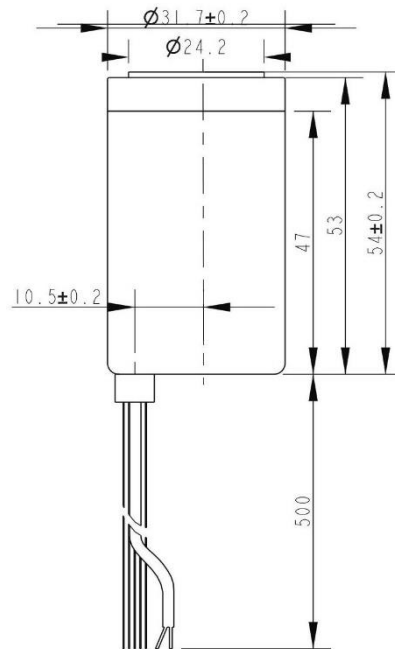
Specification

Paramater		Description	Unit
Suitable Photomultiplier tube		$\Phi 28\text{mm}$ End Window Type	/
Input Voltage		± 15	V
Input Current ⁽¹⁾		Max. VCC: 85, VEE: 20	mA
Amplifier	-3dBbandwidth	Typ. 8	MHz
	Gain	Typ. 0.3 (Load Impedance 1 M Ω)	V/ μA
	Output Signal Bias	Typ. 10	mV
	Output Signal Noise/Ripple	Max. 10	mV
	Output Pulse Polarity	Positive Polarity	/
High-voltage Power Supply	Output Voltage Range	0~1500	V
	Oouput Voltage Referenced	5.33	V
	Output Relation	$V_o = -250 \times V_{adj}$	/

Note:

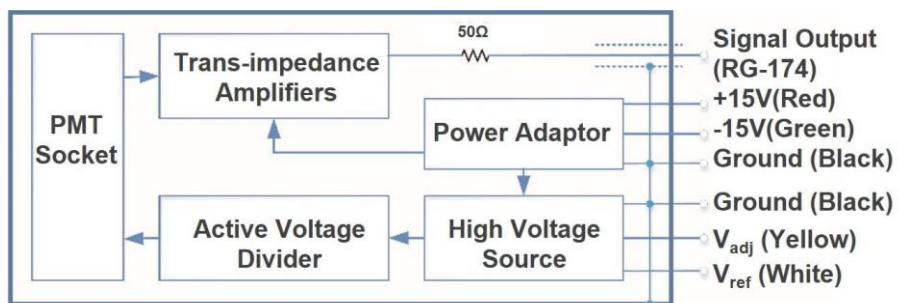
(1) Without PMT

Dimension



(unit: mm, line length can be customized)

Wiring



Cable	Voltage Control	Resistance Control
Red Line	+15V Input	+15V Input
Green Line	-15V Input	-15V Input
Yellow Line	0~6V Control Voltage	Potentiometer Center Tap
White Line	Vacant	Potentiometer End
Black Line	Ground	Ground
Black Line	Ground	Ground
Shielded Wire		Signal Output

High Voltage Power Supply – STD454

STD454 high voltage power supply is a small and compact high voltage module.

It is specially designed for photomultiplier tubes, with stable performance and strong self-protection function.



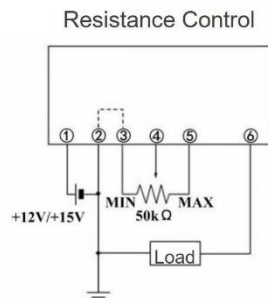
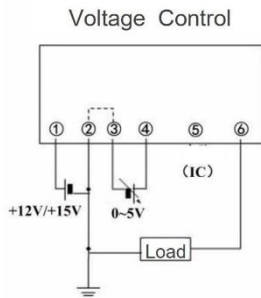
Specification

Model	STD454-01	STD454-02	Unit
Input Voltage Range	+11.5~+12.5	+11.5~12.5	VDC
Input Current ⁽¹⁾	No-load	16	mA(Typ)
Output Voltage Range	0~-1250	0~+1250	VDC
Ensure Output Voltage Range	-200~-1250	200~+1250	VDC
Current Output ⁽²⁾	0.5		mA(Max)
Nput Regulation ⁽²⁾	0.01		%(Max)
Load Regulation ⁽¹⁾	0.01		%(Typ)
Ripple (Peak-To-Peak) ⁽¹⁾	30		mV(Typ)
Output Stability (8 Hours)	0.01		%(Typ)
Output Voltage Control Mode	Applied Control Voltage (0~+5V)		/
	Applied Control Resistor (50kΩ±2.5kΩ)		
Control Terminal Input Impedance	80		kΩ
Reference Voltage	+5.15(When a 50kΩ potentiometer is applied)		V (Typ)
Output Voltage Calculation	(Control Voltage×250) ±0.5%		V(Typ)
On-Off Transient Response Rise Time ²⁾	250		ms(Max)
Temperature Coefficient ⁽²⁾	0.01		%/°C (Typ)
Operating Temperature ⁽²⁾	0~+40		°C
Operating Humidity ⁽²⁾	≤85%		/
Storage Temperature	-20~+70		°C
Size Dimension	45.6×25×12.3		mm
Weight	33±1		g
Protect Function	Protection is generated when the input voltage or control voltage is reversed,overloaded, and the output is short-circuited		/

Note:

- (1) At the maximum output voltage
- (2) At the maximum output voltage and the maximum output current
- (3) Test conditions: Load resistance is greater than 2.5MΩ, it should be avoided to use in strong magnetic field and acid-base environment

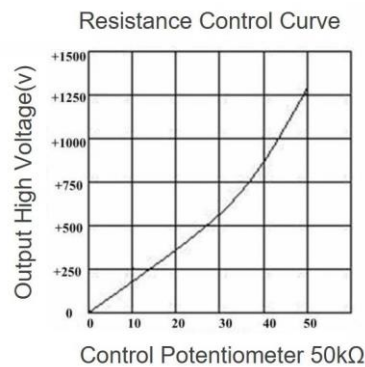
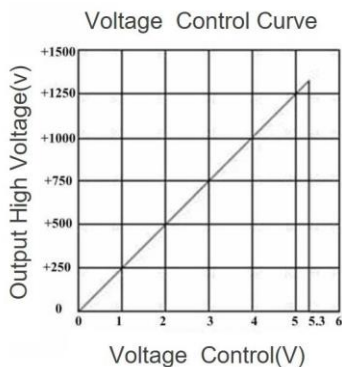
Output Voltage Control Chart



Stitch Definition

- 1.+12V/+15V DC input
2. Input/output ground
3. Control voltage
4. Control the voltage input
5. Reference voltage input
6. High voltage input

Note: The pins of 2 and 3 are connected to the internal power supply. Instability of the control voltage will directly affect the high voltage output



Note: The above control curves are taken as examples of positive high pressure (the negative high pressure curve is the same as the positive high pressure curve)

Dimension

