

### 1.1.1.5 Integrating Spheres

#### 1.1.1.5.2 Large Dimensions 5.3"

##### Features

- 4 port Integrating spheres for collimated and divergent beams
- Ø63.5mm (2.5") aperture
- Fiber or free space input
- Can be ordered with or without detectors

Model	IS6	
Use	For use with customer detector or as light source	
Detector	None – see below for detector versions	
Spectral Range $\mu\text{m}$	0.2 – 2.2	
Source Geometry <sup>(a)</sup> (see introduction)	<b>Divergent</b> (input from 2.5" side)	<b>Collimated</b> (input from 1" side)
Input Port Aperture mm	Ø25.4 (1") <sup>(b)</sup>	Ø25.4 (1")
Maximum Beam Divergence	±40deg	NA
Sensitivity to Beam Size	±3% <sup>(c)</sup>	±1%
Power Range	Depends on detector – see below	
Damage Threshold $\text{kW}/\text{cm}^2$	1 on integrating sphere surface	
Cooling	Convection	
Weight kg	1.4	
<b>Type</b>	<b>P/N</b>	
IS6-D For divergent beams (input from 2.5" side)	7Z02475	
IS6-C For collimated beams (input from 1" side)	7Z02474	
<b>Supplied Aperture Covers</b> (see page 33)	<b>IS6-D:</b> 2.5" to 1" reducer + 1" port plug + 3 ea. 1" port covers <b>IS6-C:</b> 2.5" port plug + 3 ea. 1" port covers	

Notes: (a) In each configuration, the opposing port is closed with a port plug. See diagram in introduction page 30. The divergent type should be used for beams with  $>\pm 15\text{deg}$  divergence and the collimated type for beams with  $<\pm 15\text{deg}$  divergence.  
 (b) The sphere is supplied with the 2" to 1" reducer. If desired, the sphere can be used without the reducer at full aperture of 63.5mm (2").  
 (c) For beams up to 30deg divergence, variation with beam size is  $\pm 1\%$ .

##### IS6 with Detectors - calibrated - VIS and UV types

In the detector versions, the IS6 with detector comes with a calibrated wavelength curve.

Model Detector type Use	IS6-D with Detector		IS6-C with Detector	
	IS6-D-VIS VIS High powers for divergent beams	IS6-D-UV UV Low powers for divergent beams	IS6-C-VIS VIS High powers for collimated beams	IS6-C-UV UV Low powers for collimated beams
Type	Si with filter	Si	Si with filter	Si
Spectral Range $\mu\text{m}$	0.4 – 1.1	0.2 – 1.1	0.4 – 1.1	0.2 – 1.1
Power Range (approx.)	20 $\mu\text{W}$ to 30W	300nW to 1W	20 $\mu\text{W}$ to 30W	300nW to 1W
Power Scales	30W to 300 $\mu\text{W}$	1W to 3 $\mu\text{W}$	30W to 300 $\mu\text{W}$	1W to 3 $\mu\text{W}$
Linearity with Power $\pm\%$	1	1	1	1
Configuration	Divergent	Divergent	Collimated	Collimated
Power Noise Level	1 $\mu\text{W}$	15nW	1 $\mu\text{W}$	15nW
Maximum Pulse Energy mJ	2	0.05	2	0.05
Maximum Beam Divergence	±40deg	±40deg	NA	NA
Sensitivity to Beam Size	±3% <sup>(c)</sup>	±3% <sup>(c)</sup>	±1%	±1%
Maximum Power vs. Wavelength	nm    W	nm    W	nm    W	nm    W
	<670    30	<600    1	<670    30	<600    0.7
	790    30	800-1000    0.5	790    20	800-1000    0.3
	904    20	1064    1	904    15	1064    0.5
	1064    30		1064    25	
% error per Wavelength nm	10    360 - 410	10    200 - 270	10    360 - 410	10    200 - 270
	5    410 - 950	5    270 - 950	5    410 - 950	5    270 - 950
	7    950 - 1100	7    950 - 1100	7    950 - 1100	7    950 - 1100
<b>Part Number</b>	<b>7Z02471</b>	<b>7Z02473</b>	<b>7Z02470</b>	<b>7Z02472</b>
<b>Supplied Aperture Covers</b> (see page 33)	<b>IS6-D (with detector):</b> 2.5" to 1" reducer + 1" port plug + 2 ea. 1" port covers <b>IS6-C (with detector):</b> 2.5" port plug + 1" port plug + 1" port covers			



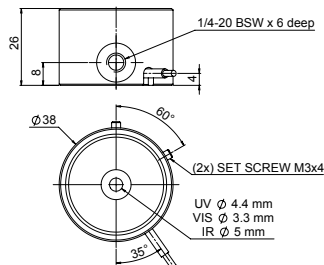
IS6-D with detector for divergent beams



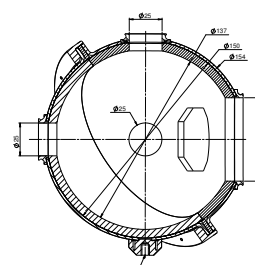
IS6-C with detector for collimated beams



IS6-D-VIS / IS6-D-UV / IS6-D-IR  
 IS6-C-VIS / IS6-C-UV / IS6-C-IR



IS6



### IS6 with Detectors - calibrated - IR types

In the detector versions, the IS6 with detector comes with a calibrated wavelength curve.

Model Detector type Use	IS6-D with Detector		IS6-C with Detector	
	IS6-D-IR IR Low powers for divergent beams		IS6-C-IR IR Low powers for collimated beams	
Type	Germanium		Germanium	
Spectral Range $\mu\text{m}$	0.7 – 1.8		0.7 – 1.8	
Power Range (approx.)	20 $\mu\text{W}$ to 30W		20 $\mu\text{W}$ to 30W	
Power Scales	30W to 300 $\mu\text{W}$		30W to 300 $\mu\text{W}$	
Linearity with Power $\pm\%$	1		1	
Configuration	Divergent		Collimated	
Power Noise Level	1 $\mu\text{W}$		1 $\mu\text{W}$	
Maximum Pulse Energy mJ	0.1		0.1	
Maximum Beam Divergence	$\pm 40\text{deg}$		NA	
Sensitivity to Beam Size	$\pm 3\%$ (a)		$\pm 1\%$	
Maximum Power vs. Wavelength	nm	W	nm	W
	<1400	30	<1400	30
	1400-1650	15	1400-1650	15
	>1650	30	>1650	30
% error per Wavelength nm	5 700 - 1650		5 700 - 1650	
	7 1650 - 1800		7 1650 - 1800	
<b>Part Number</b>	<b>7Z02477</b>		<b>7Z02476</b>	
<b>Supplied Aperture Covers</b> (see table below)	IS6-D (with detector): 2.5" to 1" reducer + 1" port plug + 2 ea. 1" port covers IS6-C (with detector): 2.5" port plug + 1" port plug + 1" port covers			
Notes: (a) For beams up to 30deg divergence, variation with beam size is $\pm 1.5\%$				

See drawings and pictures on page 32

### 1.1.1.5.3 Accessories for IS6

Accessory	Description	Part number
<b>Port plugs</b>	Port plugs close ports with white sphere material, eliminating the port from the sphere geometry.	
IS-1" Port plug	White reflectance material $\varnothing 25.4\text{mm}$ plug	7Z08280A
IS-2.5" Port plug	White reflectance material $\varnothing 63.5\text{mm}$ plug	7Z08283A
<b>Port covers</b>	Port Covers close ports with a black matte surface. They prevent extraneous light from entering the sphere without changing the sphere configuration. These covers can also be used as blanks for making specialized port adapters.	
IS-1" Port cover	Matte black coated $\varnothing 25.4\text{mm}$ cover	7Z08282A
IS-2.5" Port cover	Matte black coated $\varnothing 63.5\text{mm}$ cover	7Z08281A
<b>Adapters and Reducers</b>	The adapters are black coated and the reducers white coated.	
1" SMA fiber adapter	Attaches to the 1" port for SMA fiber input/output	7Z08285
1" FC fiber adapter	Attaches to the 1" port for FC fiber input/output	7Z08286
2.5" to 1" reducer	Attaches to the 2.5" port and turns it into a 1" port.	7Z08287
1" to SM1 adapter	Attaches to the 1" port and has a female SM1 thread	7Z08289
1" to C-mount adapter	Attaches to the 1" port and has a female C-mount thread	7Z08290
1" to C-mount reducer	Attaches to the 1" port. Has a male C-mount thread and 11mm aperture	7Z08288

IS-2.5" Port Plug



IS-1" Port Plug



IS-2.5" Port Cover



IS-1" Port Cover



2.5" to 1" Reducer



1" FC Fiber Adapter



1" to SM1 Adapter

