

## Barcode reading

### Does the VisionMate HSX barcode reader have certification that suggests it can be used in a cleanroom environment?

Yes, the Thermo Fisher™ VisionMate™ HSX barcode reader is IP66 certified indicating that the barcode reader can be used in various applications including a cleanroom and maintain a critical environmental barrier with the assurance that neither dust nor water can enter or exit the device.

#### What is IP66 certification?

The basic standard for determining the ability of an enclosure to protect its internal contents from contaminants is known as EN 60529 testing. The testing parameters for EN 60529 are ingress protection or "IP" code tests. The first number after IP indicates the degrees of protection against solid foreign objects (Table 1). The second number indicates the degrees of protection against water (Table 2).



Table 1. Degrees of protection against solid foreign objects indicated by the first number.

First number	Degree of protection	
	Brief description	Definition
1	Protected against solid foreign objects of 50 mm and greater.	The object probe, sphere of 50 mm shall not fully penetrate.
2	Protected against solid foreign objects of 12.5 mm and greater.	The object probe of 12 mm, shall not fully penetrate.
3	Protected against solid foreign objects of 2.5 mm and greater.	The object probe of 2.5 mm, shall not penetrate at all.
4	Protected against solid foreign objects of 1 mm and greater.	The object probe of 1 mm, shall not penetrate at all.
5	Dust protected.	Ingress of dust is not totally preventable, but dust shall not penetrate in quantity to interfere with satisfactory operation of the apparatus or to impair safety
6	Dust tight.	No ingress of dust.

**Table 2. Degrees of protection against water indicated by the second number.**

Second number	Degree of protection	
	Brief description	Definition
1	Protected against vertically falling water drops.	Vertically falling drops shall have no harmful effects.
2	Protected against vertically falling water drops when enclosure is tilted up to 15°.	Vertically falling drops shall have no harmful effects when enclosure is tilted at any angle up to 15° on either side of the vertical.
3	Protected against spraying water.	Water sprayed at an angle up to 60° on either side of the vertical shall have no harmful effects.
4	Protected against splashing water.	Water splashes against the enclosure from any direction shall have no harmful effects.
5	Protected against water jets.	Water projected in jets against the enclosure from any direction shall have no harmful effects.
6	Protected against powerful jets.	Water projected in powerful jets against the enclosure from any direction shall have no harmful effects.
7	Protected against the effects of temporary immersion in water.	Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is temporarily immersed in water under standardized conditions of pressure and time.

**What are the testing procedures?**

To test for ingress protection from foreign objects, the VisionMate HSX barcode reader was placed in a dust chamber under pressure (relative to surrounding air) for 8 hours with talcum powder passed through a calibrated sieve (Figure 1). To test for ingress protection from water, the VisionMate HSX barcode reader was sprayed for no less than 3 mins with water using a 12.5 mm nozzle at a water pressure of 100 liters/min in all practical directions and at a distance of 2.5-3 meters (Figure 2).



**Image 1. 2D barcoded rack used on the VisionMate™ HSX barcode reader.**



Figure 1. Images showing the VisionMate HSX barcode reader in the dust chamber before/after testing for ingress of foreign objects. Note the talcum powder covering the VisionMate™ HSX barcode reader after testing.

**What are the testing results?**

The IP66 certification test results show that no dust entered the enclosure of the VisionMate HSX barcode reader and certifies it dust tight (Figure 1). The water ingress test results show that the enclosure was protected against powerful water jets in all directions and that no water entered (Figure 2).



Figure 2. Images showing the VisionMate HSX barcode reader before/after testing for ingress of water. Note water in the up-close image after testing.

**What are the benefits IP66 certification?**

The VisionMate HSX's code reader's certification of IP66 provides assurance that the barcode reader can be used in various applications including a cleanroom environment. The results of the IP66 testing show the ability of the VisionMate HSX barcode reader to protect against any liquids that may enter during the wipe-down and sterilization of equipment. It also provides the user confidence that the VisionMate HSX barcode reader will not be a source of contamination and will not be affected by residual condensate from frozen racks during reading.

Taken together, the IP66 certification of the VisionMate HSX barcode reader provides additional assurance that the barcode reader will protect itself from dust and water during use including a cleanroom environment.

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