



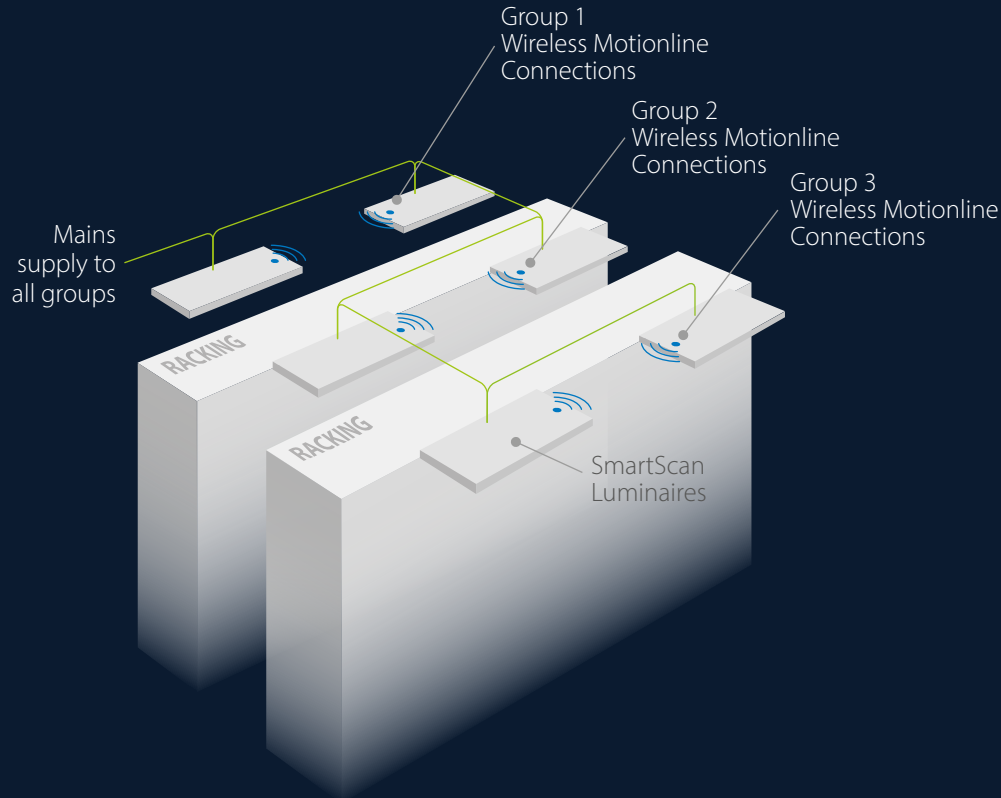
S M A R T S C A N



PRESENCE DETECTION GUIDE



SmartScan Internal uses a passive infra-red (PIR) movement sensor built into each luminaire. Infra-red sensing is a commonly used technology for lighting control, but it is important to consider a few factors in order to get the best performance from the luminaires.



Presence Detection

There are four different sensors available:

Standard Sensor – for use up to 8m

High Level Sensor – for use up to 18m

External Sensor – for use up to 8m

Radar Sensor – for use up to 4m

Motionline

If one luminaire detects movement, a signal is passed to all of the luminaires in the group triggering all luminaires to illuminate. This ensures effective group control and extends presence detection coverage. SmartScan luminaires utilise wireless mesh technology - particularly helpful in retro-fit and external applications.

Mounting Height

As the mounting height increases, so does the amount of movement needed to trigger the sensor. Hand movement may not be sufficient for sensors mounted higher than 6m therefore the person may need to be walking to be detected.

Positioning of the Sensor

Where possible, SmartScan luminaires should be positioned in such a way that the detection areas overlap. The SmartScan system has a sensor in each luminaire ensuring that the optimum detection level is easily achieved using conventional spacing.

STANDARD SENSOR



MOUNTING HEIGHTS UP TO 8 M

Ambient Temperature

In order for movement to be detected, the PIR sensor requires the moving object to have a temperature differential of at least 4°C from the surrounding area. In a typical indoor application there is sufficient difference between a person, with a typical external skin temperature of 32°C (measured on the head or hands), and the surrounding ambient temperature of 20°C. However, as the ambient temperature rises or falls there are certain factors to consider:

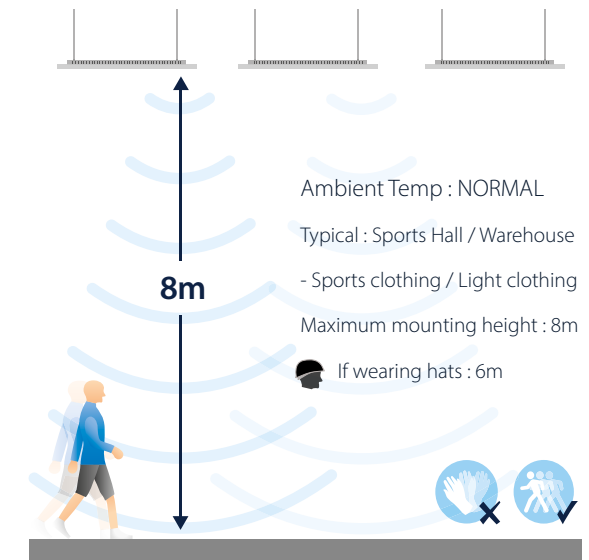
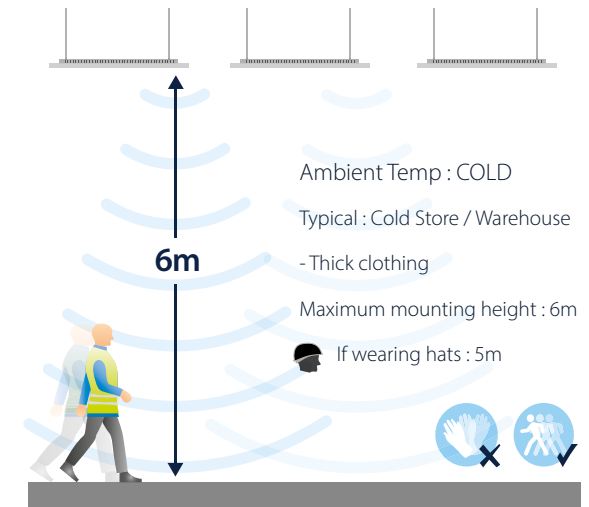
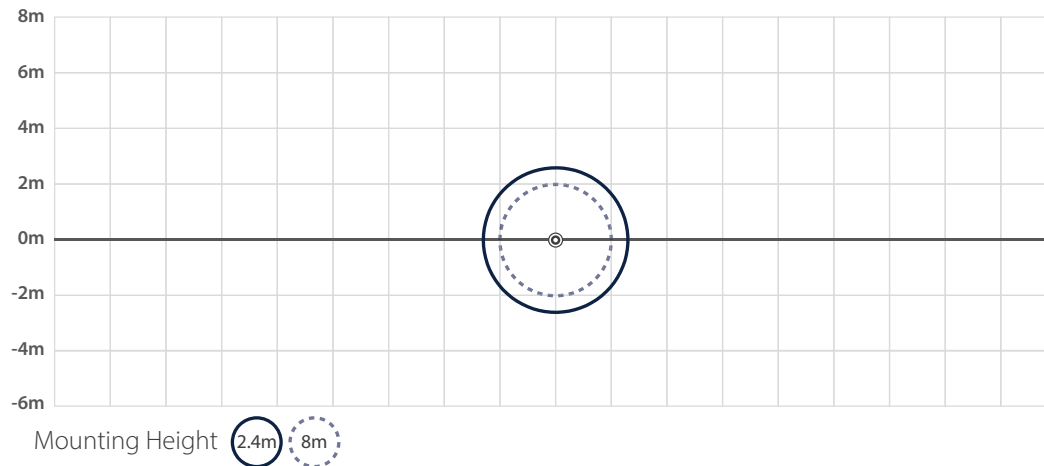
Low Ambient Temperature

In low temperature applications personnel often wear insulating clothing. This can reduce the thermal image presented to the sensor reducing its effectiveness.

High Ambient Temperature

In higher ambient temperature applications (>30°C) the sensitivity may be reduced as the differential between ambient and body temperatures is reduced.

SmartScan Sensor - Detection Area



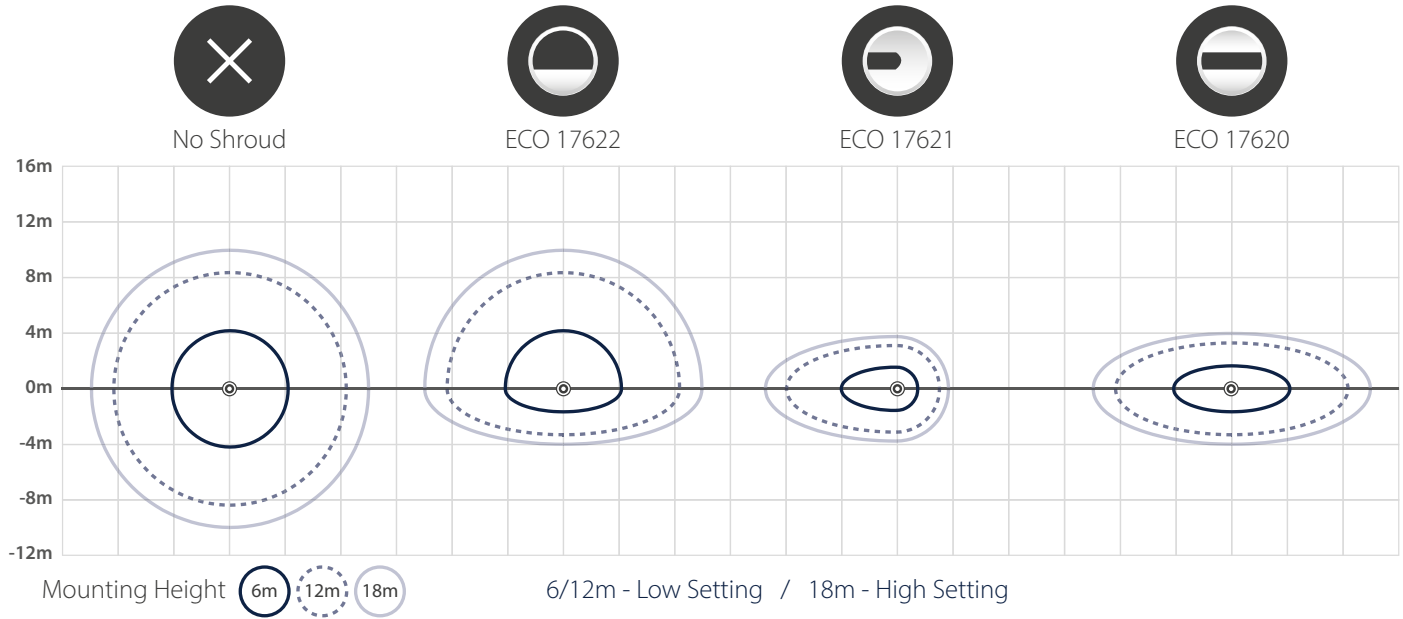
HIGH LEVEL SENSOR



MOUNTING HEIGHTS UP TO 18M

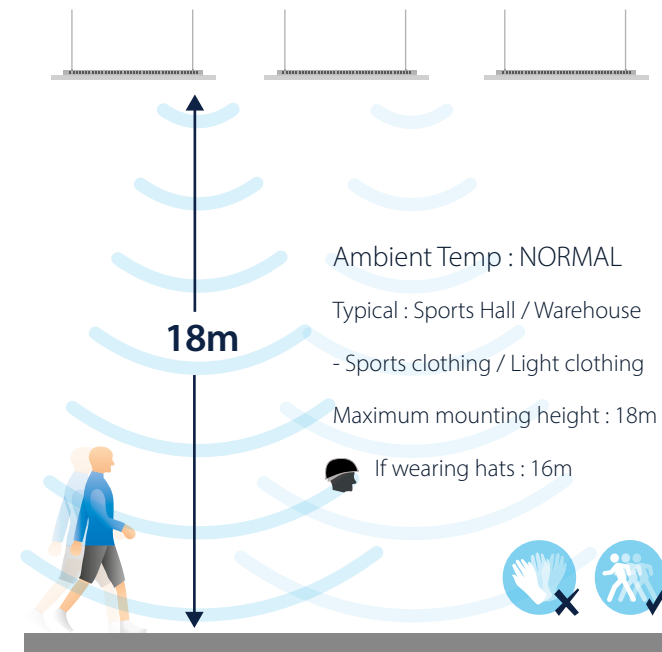
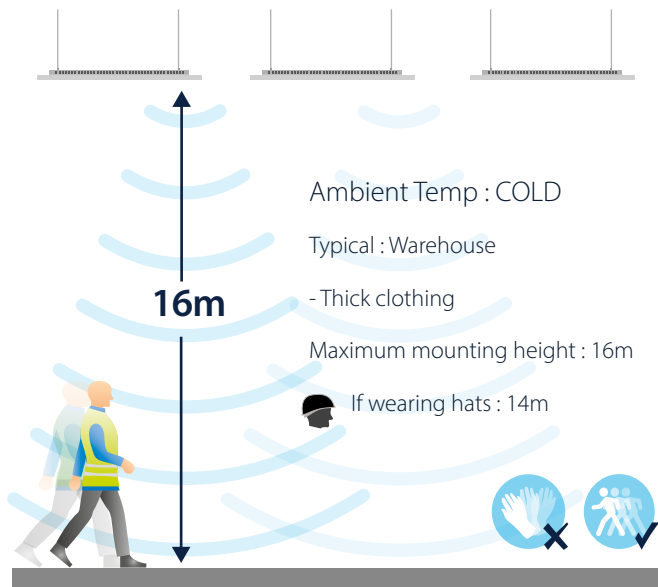
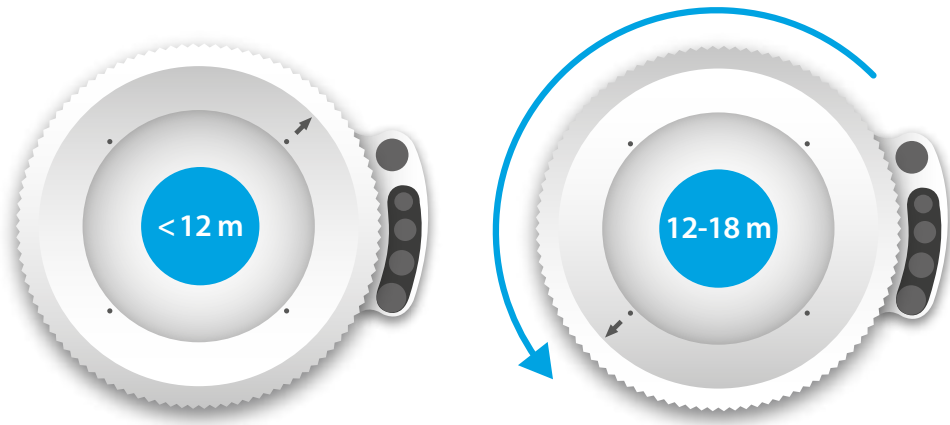
The High Level Sensor is optimised for mounting heights up to 18m. An adjustable lens allows for the detection area to be tuned to suit the application perfectly, with the lens at the “high” setting for all applications above 12m. All SmartScan settings can be configured from ground level using the SmartScan Programmer.

High Level SmartScan Sensor - Detection Area



Optional shrouds can be fitted to the High Level SmartScan Sensor to restrict the detection area if required. For example, ECO17620 could be used in racking areas to avoid detecting movement in adjacent aisles.

For optimum presence detection it is recommended that luminaires are grouped using Motionline. In retrofit applications SmartScan provides a wireless Motionline signal so removing the need for any additional cabling.



- Small movement
- Large movement

SYSTEM

SMARTSCAN EXTERNAL SENSOR



MOUNTING HEIGHTS UP TO 8 M

Modern lighting schemes for external spaces are based on minimising light pollution whilst ensuring that public walkways and roads are well lit. SmartScan External luminaires have been designed so that the detection area of the sensor is central to the light distribution of the luminaire.

In areas where trees or bushes are present please ensure that any foliage is trimmed back behind the luminaire to ensure optimal movement detection and lighting efficiency.

SmartScan External uses a passive infra-red (PIR) movement sensor built into each luminaire. Infra-red technology is commonly used for lighting control, but when used externally a number of factors are increasingly important.

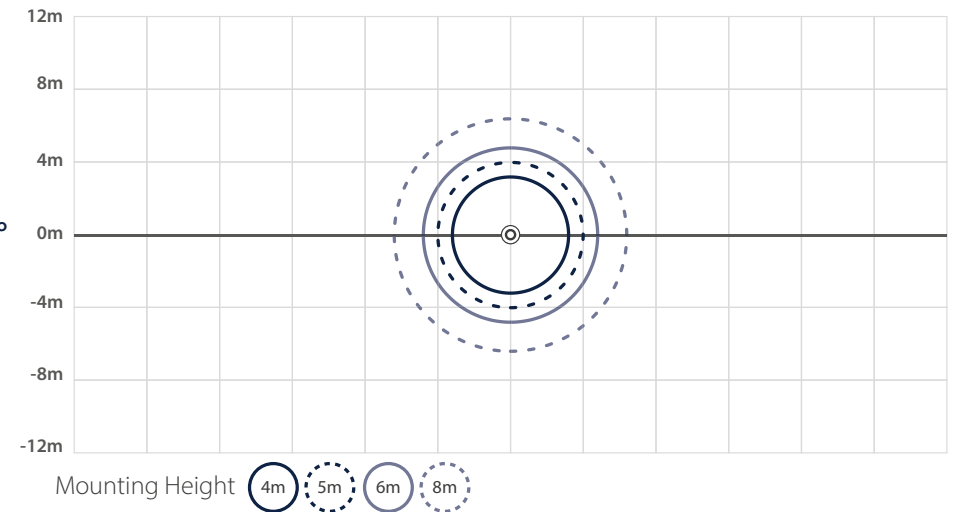
Angle of the Sensor

The majority of SmartScan External luminaires are wall or column mounted, projecting the light away from the wall or column. The sensor is angled at 28° from the horizontal to focus the presence detection within the lit area, providing limited detection coverage behind the column. Some SmartScan External luminaires are designed for use in canopies and therefore the sensor is directed vertically towards the floor.



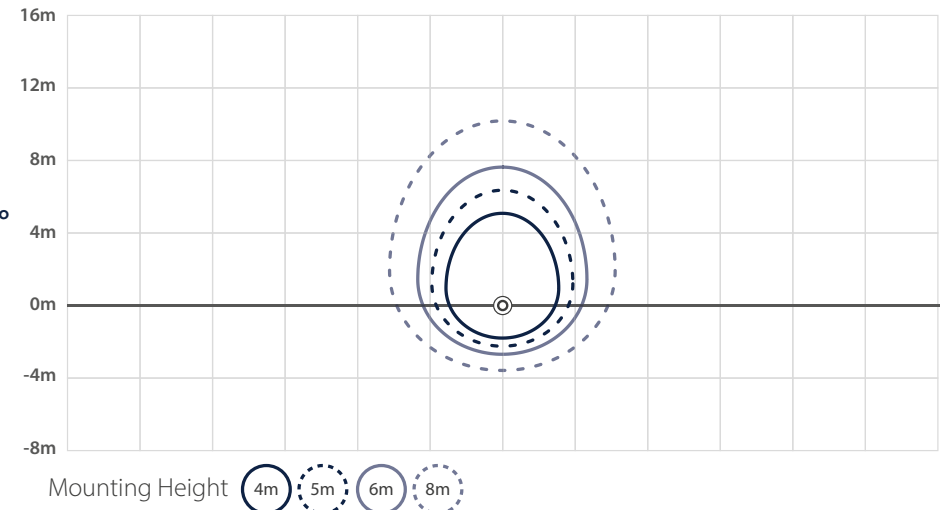
0°

SmartScan External Sensor - Detection Area - 0°



28°

SmartScan External Sensor - Detection Area - 28°





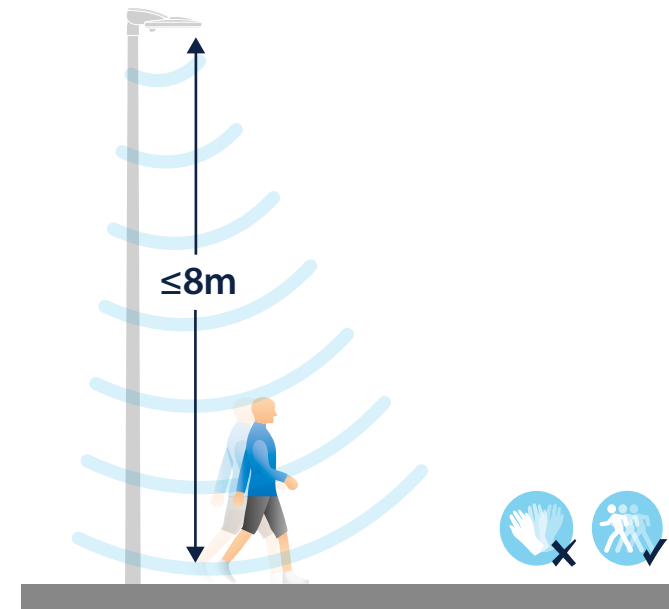
Ambient Temperature

The PIR within the sensor relies on detecting the heat of a person moving across the detection area. For best reliability the temperature of the person should be at least 4°C different from the background, in this case the floor.

As the ambient temperature drops people wear more layers or coats to keep warm. This insulates the body, therefore a larger movement must be made in order for presence to be detected, or presence may not be detected at the extremities of the detection area.

The amount of time that an individual has been outside can also vary detection sensitivity. Clothing will chill to match the outside temperature. The sensor is more likely to detect a person leaving a building on a cold day than somebody that has been outside for long periods. Therefore they may not be detected until closer to the centre of the detection area.

The detection patterns detailed opposite are based on optimum conditions; the total area may reduce depending on the factors described above.



SMARTSCAN RADAR PRESENCE DETECTION



MOUNTING HEIGHTS UP TO 4 M

SmartScan Radar uses a 24GHz high frequency sensor to detect movement. This technology benefits from increased sensitivity with fewer detection errors than traditional 5GHz microwave solutions.

Presence Detection of the Sensor

The system can be used in both wall and ceiling mounted applications for internal and external areas. With customisable sensitivity settings the system can be commissioned to suit the environment.

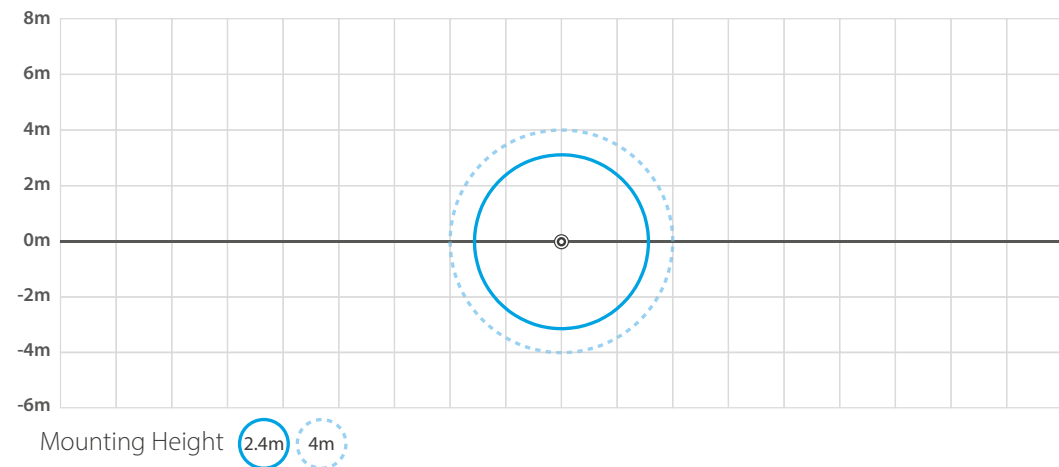
Motionline

It is strongly recommended that SmartScan luminaires are connected using Motionline. If one luminaire detects movement, a signal is passed to all of the luminaires in the group triggering all luminaires to illuminate. This ensures effective group-control and extends presence detection coverage. SmartScan Radar luminaires utilise wireless mesh technology to create switching groups. Particularly helpful in retro-fit and external applications.

Mounting Height

Suitable mounting heights up to 4m (2.5m max when wall mounted). Where possible, luminaires should be positioned in such a way that the detection areas overlap. The SmartScan Radar system has a sensor in each luminaire ensuring that the optimum detection level is easily achieved using conventional spacing.

Radar Sensor - Detection Area





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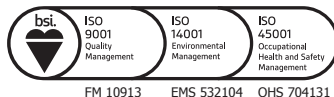
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