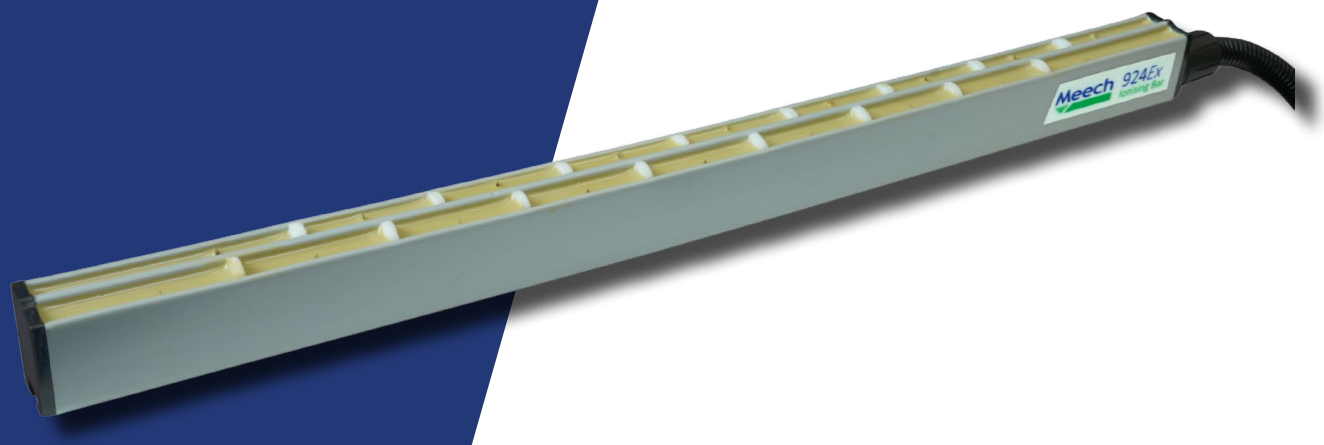
Operating Manual



Model 924EX

Pulsed DC Ionising Bar

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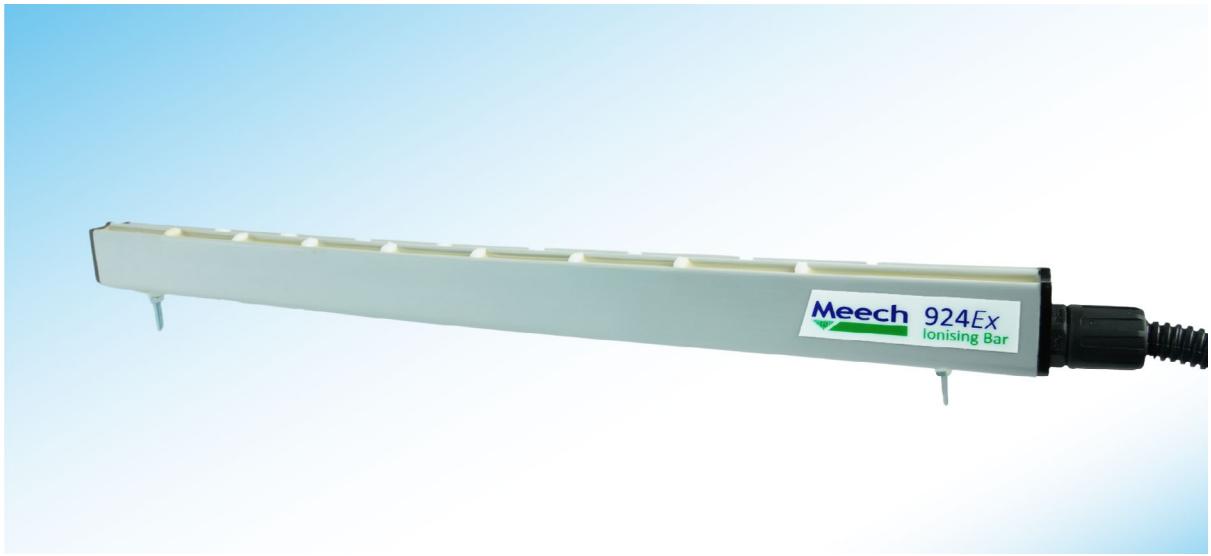
1. Introduction



The 924 is now available for use in potentially explosive atmospheres. The 924EX offers the same outstanding levels of performance, reliability, easy maintenance and features associated with Meech Pulsed DC technology. It is ATEX approved and can be used in zone 1 applications. It is designed to control static charges in short range applications and is particularly suited for use in hazardous areas and applications such as gravure printing, film extrusion and coating.

The 924EX is a compact pulsed DC ionising bar designed to be used on the most arduous static elimination problems. The special resistive coupling of its emitter pins renders them shockless, whilst giving powerful static neutralisation performance.

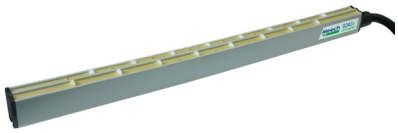
The 924EX is powered by a PulseDrive Plus HL 5.5kV Pulsed DC Controller. They are designed to work together as a system, meaning that customers can now benefit from the features associated with the Hyperion range in hazardous environments. The output voltage, frequency and balance can all be adjusted to suit particularly difficult applications and very sensitive materials found in Ex zones.

2. Unpacking And Inspection

The Model 924EX Bar was carefully packed at the factory. Nevertheless, we recommend careful examination of the carton and contents for any damage. If damage is evident, keep the packing material and immediately notify the carrier of a possible damage claim. Shipping claims must be made by the consignee to the delivering carrier.

2.1. Package Contents

2.1.1. Standard



924EX Bar

Mounting Kit

2.1.2. Options

BarMaster remote programmer. Allows optimisation of the 924EX's controller

PulseDrive Plus HL 5.5kV Pulsed DC Controller

SmartControl Touch Allows optimisation of the output of the Pulsed DC Controller and monitoring and data logging plus remote access.

Power Cable - 4 Pin M8
(straight or 90º elbow)
Available in 2,3,5 and 10M lengths.

24VDC Supply & C5 cable

3. Features and Benefits of 924EX

3.1. Overall look

The profile of the 924EX Bar provides ionisation through alternating positive and negative emitter pins mounted in a PC ABS extrusion. The emitter pins are resistively coupled to the high voltage pulsed DC source, rendering the emitters shockless to touch and will give many years of service.

3.2. Compact Size and Full Length Ionisation

The small cross-sectional size of the 924EX means that it will fit into tight installation positions. The bar has been designed to give full performance over its entire length, ensuring full coverage of webs that run close to machine frames.

3.3. Sealed Construction

Sealed IP67 style construction allows the bar to be used in harsh environments, subject to wash-down or where there is the likelihood of spillages.
Please note should the bar become wet, it must be thoroughly dried before being powered-up.

3.4. Shockless Titanium Emitters

As with our Hyperion range bars, the 924EX uses Titanium emitter pins. Almost indestructible, these pins will give many years service. For the comfort and safety of the operator, the pins are resistively coupled and shockless to touch.

3.5. Divider

The 924EX is designed to operate in dirty, factory environments. To minimise the impact of contamination and maximise the interval between cleaning, the bar features a divider between the positive and negative emitters. This divider is an essential feature of the bar.

3.6. T-Slot

Mounting of the bar is made easy using the T-Slot at the rear of the bar. The M4 T-Bolts used are the same as used on other Meech Pulsed DC bars.

4. Specific Conditions of Use

- If there is any damage to the web or material that is being neutralised by the static eliminator bar, then the bar must be checked for damage and relevant maintenance or replacement of the bar carried out.
- The equipment may not be used in association with dusts having an electrical resistance equal to or less than $10^3\Omega.m$.
- The Meech 924EX static eliminator bar shall be supplied only by the Meech Hyperion PulseDrive Pulsed DC Controller or Meech 233v4HL that is set to produce 5.5kV peak maximum.
- The equipment must be installed so that it is shielded from UV light.
- The equipment must be installed in a manner that provides complete protection against impact
- The user must determine, in consultation with the manufacturer, the suitability of the apparatus for use with particular solvents.
- The plastic case presents a potential static discharge risk and while in a hazardous area must be cleaned only with a damp cloth.

5. Installation

The 924EX Bar should be located in the most convenient position so that the pins of the Bar are directed towards the target area. The bar should be positioned to give an unrestricted path for the ions to travel to the target area.

The Meech Model 924EX must be connected to a PulseDrive Plus HL 5.5kV or 233v4HL 5.5kV Pulsed DC Controller (discontinued in 2025), which must be located outside of any EX zoned area. The maximum output voltage is 5.5kV to respect the ATEX certification of the 924EX bar, so only the PulseDrive Plus HL 5.5kV or the 233v4 HL 5.5kV must be used.

A) REFER TO IEC60079-14 FOR WIRING REQUIREMENTS. THIS EQUIPMENT IS SUITABLE FOR ZONE 1 APPLICATIONS, II 2G IIC T4 Gb OR NON-HAZARDOUS LOCATIONS ONLY

B) WARNING - EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR ZONE 1

C) WARNING - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.

The 924EX connects to the Pulsed DC Controller by plugging the male plugs, found at the end of the bar cabling, directly into the high voltage sockets of the controller. The plugs and sockets are marked with “+” positive and “-” negative indicators for correct connection to the power supply.

The 924Ex is marked as follows:

ATEX: Ⓔx II 2G IIC T4 Gb (Ta = -20°C to +38°C)

IECEx: Ex sb IIC T4 Gb (Ta = -20°C to +38°C)

It is suitable for installation in Zone 1 and Zone 2 areas, for use with gas groups up to IIC, T4.

It is not certified for use in Zone 0 area.

It is the customer’s responsibility to ensure that the 924EX certification is correct for the installation environment

For additional details of installation please refer to the Operating Manual of the Pulsed DC controller that is being connected to the 924EX:

- **PulseDrive Plus HL 5.5kV**

or

- **233v4 HL 5.5kV (discontinued in 2025)**

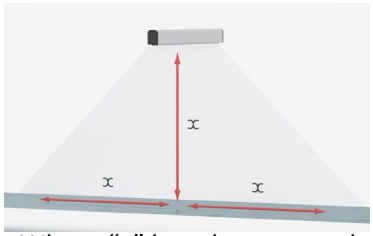
WARNING

Meech Pulsed DC Controllers require a grounded 24VDC supply. The 0V line **must** be connected to ground. Failure to do so, will result in damage to the ioniser or the 24V supply and will void the warranty.

5.1. Mechanical Installation

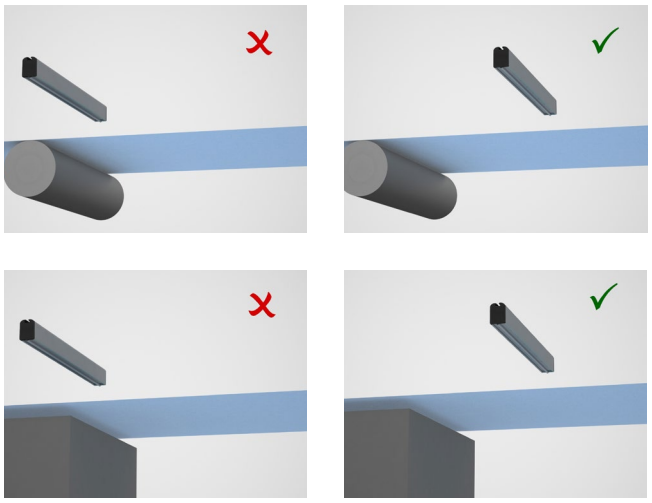
The 924EX is a short to mid-range bar. Dependent on the application, the bar will be mounted between 20mm and 200mm from the target surface.
The bar should be mounted securely, using all the M4 T-bolts provided with the bar.

Correct positioning of the bar is vital for effective static control. There must be no metallic objects or obstruction between the bar and the material. The diagram shows the area that should be kept clear.



Where “x” lengths are equal

When installed at short range over a web or sheet, the bars must be positioned away from surfaces and rollers, as shown in the following diagrams.



Your Meech distributor will be able to assist with questions regarding positioning of your equipment.

6. Operation

Having connected the male grey HT plugs to the power supply, power up the power supply and check the Pulsed DC Controller. The controller will indicate that the bar is running correctly with a good ion output.

CAUTION:
Always turn off the power supply before connecting or disconnecting the male grey HT plugs. Failure to do so could result in stored charges giving a small electric shock.

6.1. Setting 924EX Frequency and Balance

Optimum static elimination can be achieved by adjustment of the “Frequency” (frequency of pulsing) and the “Balance” (proportion of positive to negative ions generated) on the Controller.

Note: To change these settings you can adjust locally using the connected PulseDrive Plus HL 5.5kV Pulsed DC Controller or by using a BarMaster or SmartControl Touch.

6.1.1. Setting Frequency

The default setting of 20 Hz provides optimum ionisation at distances of 20 to 40mm.

If the bar is positioned at greater distance from the target area the “Frequency” should be set to a lower Hz setting.

6.1.2. Setting the Balance

If the polarity of the static charge to be removed is known, the balance can be adjusted to give a faster decay speed.

I.E. a) If the static charge is known to be positive the balance should be adjusted towards negative on the PulseDrive Plus HL 5.5kV.

b) If the static charge is known to be negative the balance should be adjusted towards positive on the PulseDrive Plus HL 5.5kV.

7. Maintenance

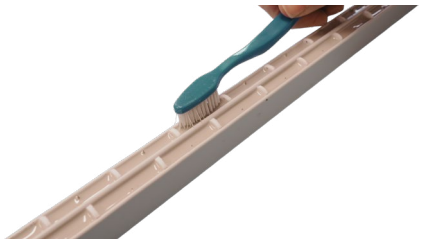
Ionising bars become contaminated with usage. Dirt build-up on the body of the ioniser and, particularly on the pins, will cause a drop in performance. To get the best from your bar, it should be cleaned as part of regular machine maintenance.

If regular cleaning is not carried out, the controller will detect the drop in performance and trigger the Clean Pin alert. See operating manual for the Pulsed DC Controller.

Before cleaning, ensure that the equipment is switched off.

Emitter pins can be cleaned very effectively with a brush. A dry toothbrush is ideal.

Make sure the central divider is also cleaned and the pin surface of the bar.



As per the specific conditions of use, the bar must only be cleaned with a damp cloth. No solvents should be used to clean the 924EX while it is situated in an ATEX zone.

Note: Ensure the ionising bar is dry before powering on.

8. Fault Finding

The Model 924EX ionising bar forms part of a system, comprising the bar itself and a Pulsed DC Controller, either the PulseDrive HL 5.5kV or the 233v4 HL 5.5kV (discontinued in 2025).

For Fault finding please refer to the Operating Manual for the Pulsed DC Controller connected to the 924EX bar:

- PulseDrive Plus HL 5.5kV

or

- 233v4 HL 5.5kV (discontinued in 2025)

9. Technical Characteristics

Physical Characteristics	
Width x Height and available lengths	22.1mm x 31.2mm Available lengths: 240mm to 2040mm (in 40mm increments)
Weight	Approximately 0.4kg/metre
Mounting	M4 x 35mm
Construction	
Enclosure	PC ABS
Protection Class	IP67 style construction
Maximum Ambient Temperature	38°C
Supply	
Power Supply	PulseDrive Plus HL 5.5kV
Connection	Grey HT male plugs
Cable Length	5m standard, other lengths available on request
HT Cable	TV20
Output	
Voltage	5.5kV Pulsed DC (1 to 5.5kV) *
Frequency	20 Hz (typical operating range 5 to 20 Hz) *
Balance	54% positive (20 to 80%) *
Emitters	Titanium TA9
Suggested Operating Range	20 to 200mm
Monitoring and Control	
Local Indication	The PulseDrive Plus HL 5.5kV Pulsed DC Controller connected to the 924EX has local indication - Green/yellow/red LED
Alarm Input & Outputs	The PulseDrive Plus HL 5.5kV Pulsed DC Controller connected to the 924EX has Alarm Input and Outputs. Dual outputs for Alert and Fault monitoring (0V/24V) ‡ 1x Alert output (e.g. clean pin alert) 1x Fault output/standby input †
Compliance	
Certifications	CE and UL ATEX: Ⓔx II 2G IIC T4 Gb (Ta = -20°C to +38°C) IECEx: Ex sb IIC T4 Gb (Ta = -20°C to +38°C)

* Adjustable with PulseDrive Plus HL 5.5kV or BarMaster or SmartControl Touch

† Adjustable with BarMaster

‡ Both are IEC 61131-2 Type 1, Type and Type 3 compatible

10. Repairs And Warranty

The 924EX bar is warranted by Meech Static Eliminators Ltd to the original purchaser against defects in material and workmanship for one year after purchase. Should any malfunction occur, please return the bar directly to Meech Static Eliminators or your local distributor. All products returned to the factory MUST be accompanied by a return authorisation number and must be shipped prepaid. For prompt service, ship the unit to the factory with the return authorisation number shown clearly on the label. Be sure it is well packed in a sturdy carton with shock absorbing material.

Include a note stating the nature of the problem as specifically as possible, and also include instructions for returning the bar to you. We will pay one-way return surface shipping costs on any repairs covered under the warranty.

Field repairs should not be undertaken during the warranty period. Repair attempts by unqualified personnel will invalidate the warranty.

11. CE Approval

A CE Declaration of Conformity for this product exists and can be provided on request.

CE

12. UL Certification

The 924EX is compliant with UL Listing requirements. A copy of the UL certification can be found at www.meech.com/download/ul-certificates/

13. ATEX Certification

EC type examination certificate No: BASEEFA 18ATEX0082X

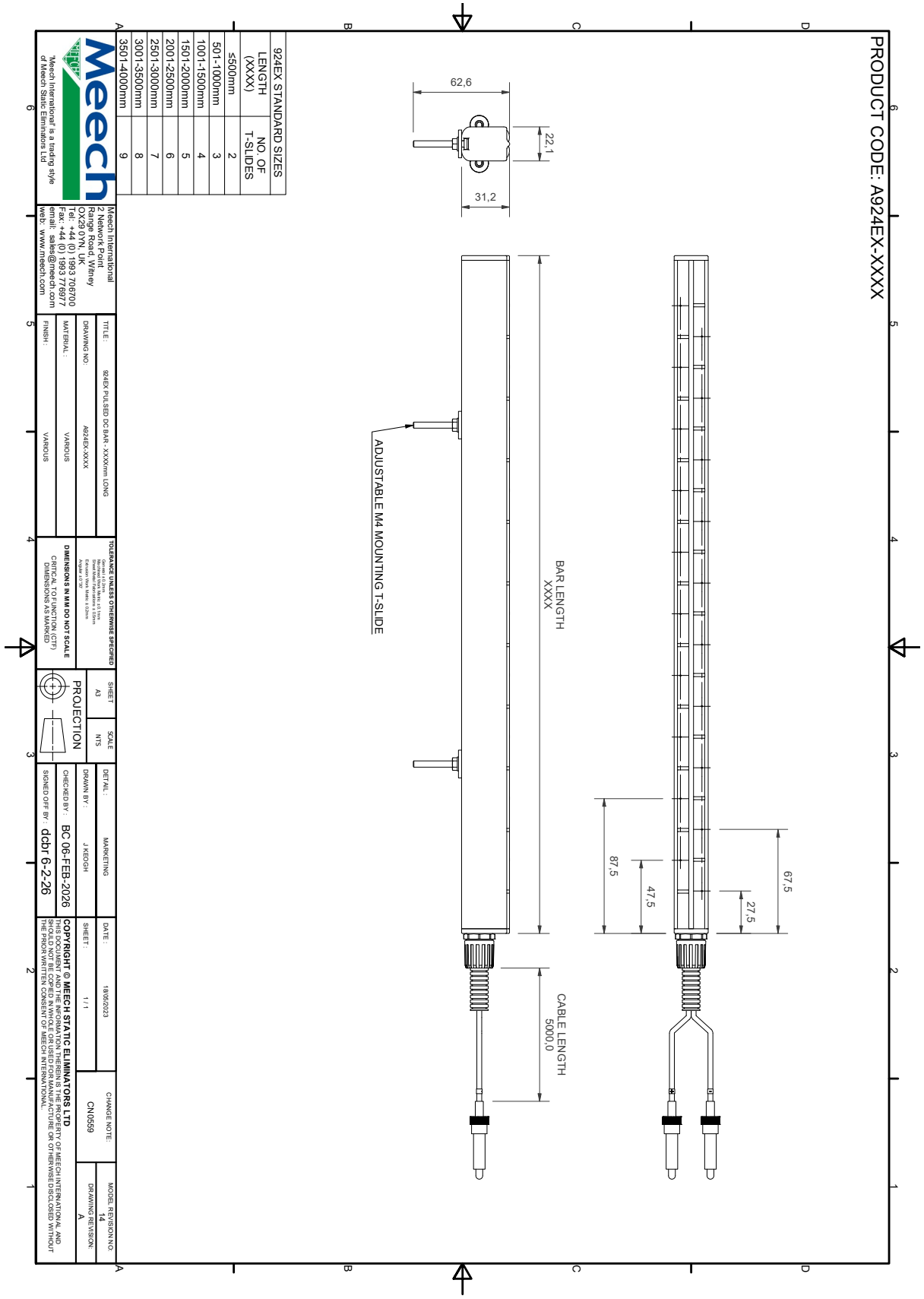
Ex II 2G IIC T4 Gb (Ta = -20°C to +38°C)

The ATEX certificate for the 924EX can be found at www.meech.com/download/atex/

14. Health and Safety

Emission of Ozone: Considerably below international standard of 0.1 ppm.

15. Technical Drawing



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