



Leica CLS X-Series

Cold light illumination



Innovative system delivers ultimate performance

Proper illumination is a necessity for precision work. Cold light sources constitute an essential piece of microscopy equipment when it comes to illuminating specimens in the best possible way. The new CLS X series from Leica represents a universally applicable illumination system that can be tailored to the complex needs of scientists and engineers.

The light guide is supplied with "cold" light by perfectly coordinating a heat protection filter in front of the halogen bulb and by spatially isolating the halogen bulb from the surface being illuminated. The light is transmitted by bundles of glass fibers and guided to the object in the form of concentrated cold light, virtually free of heat-bearing infrared wavelengths.

Ultimate cold light illumination performance is only achievable by means of a perfectly designed complete system. This includes the light source, light guide and multiple accessories. Special attention was paid to high-performance light sources and in particular to high-performance light guides.

Consequently, Leica's CLS X series guarantees a new dimension in light output, light quality and system costs.

The completely innovative light source product line allows the economical CLS 50 X light source to be used in applications that have previously only been the domain of light sources with 150 W power sources. And has a bulb life that far exceeds that of comparable products.

The cold light sources and light guides are compatible with all Leica stereomicroscopes. Custom-made designs are also possible for special illumination requirements.

All light sources are available as ESD versions (any voltages generated at the ESD light guide are dissipated via the light source). Medical designs can also be supplied to customer specifications.

The accustomed Leica quality is guaranteed not only by ongoing investment in research and further development, but also by consistent quality management.



All advantages of the Leica CLS X series

- Ultimate light output and illumination quality
- Maximum bulb life
- Nearly unlimited light source and light guide combination possibilities
- Manual (diaphragm) and continuous electronical brightness control (potentiometer) with/without color temperature modification
- Compact ergonomic lightweight design
- Space-saving storage, stackable light sources
- Simple, user-friendly handling
- Vibration free, quiet operation
- Thermal overload protection
- Newly developed switched-mode power supply with extended voltage range
- Improved heat absorbent filter for higher transmission
- Compliance with all safety-related standards
- ESD design for light guides
- Connection to LAS possible (CLS 150 XD and LS)
- Remote control via manual facility or serial interface (RS 232) for computer connection of light sources with remote connection
- Broad range of fiber light guides
- Wide range of accessories for special applications
- Side filter insert
- Integrated Soft Start
- Simple bulb replacement

*Stackable thanks to
ergonomic design with
integrated handle*

Side filter insert



Simple bulb replacement



The Leica CLS X series – the perfect solution for every challenge

Together with the extensive range of accessories, the new Leica CLS X series cold light sources offer a unique illumination system. The outstanding lighting quality ensures extra bright, uniform, flicker and shadow free illumination of the specimen. With the aid of a special heat protection filter, the thermal impact is largely minimised without transmission loss.

Bulb life has been increased through the use of especially designed power supplies featuring an inbuilt soft start function. Similarly, dimming the bulb increases service life immensely. Bulbs can be replaced quickly and easily without the need for tools.

The filter insert is on the side of the unit, making it possible to replace a filter even when the light sources are stacked. The filter holders permit filters to be replaced and inserted very simply.

The fan and ventilation slits are arranged to the rear. This ensures that the working environment is free of disruptive drafts and gleaming light.

The CLS 100 X, CLS 150 X and CLS 150 XD models all have a mechanical diaphragm that enables constant color temperature and homogenous illumination at all light intensities.

In addition to other special features, the CLS 150 XD cold light source has a power supply with a voltage range from 100–240 V, making the light source to be used anywhere in the world.

Furthermore, by smoothing the supply voltage this power supply generates a extremely uniform light. The ripple (range of voltage fluctuation in %) of the power supply voltage supplied to the bulb is under 1%. The fluctuation in the actual brightness, which is caused by the lag of the bulb, is even lower. This is relevant for different special applications, especially in connection with image processing tasks.

The CLS 150 LS shutter light source has been especially matched for automating and controlling the new TL RC™ back light base via LAS (Leica Application Suite). The brightness, color temperature and electronic shutter can be controlled directly via PC through serial interface.



The models



Leica CLS 50 X

- The ideal economical model that is fully capable of matching higher performance devices when used in conjunction with the newly developed light guides.
- Electronic brightness control
- Operates without a fan, thus especially suitable for applications requiring quiet, vibration-free operation



Leica CLS 100 X

- High, economical output
- Uniform illumination with constant color temperature
- Continuous brightness control through mechanical diaphragm
- Exceptionally long bulb life
- Fan-cooled light source



Leica CLS 150 X

- Optimal light output with maximum cost-effectiveness
- Mechanical and electronic brightness control
- Constant and adjustable color temperature
- Fan-cooled light source



Leica CLS 150 XE

- Continuous electronic brightness control
- Adjustable color temperature
- Potentiometer enables voltage regulation, thereby increasing bulb life



Leica CLS 150 XC

- Same as CLS 150 X, with additional green swing-in filter

The models



Leica CLS 150 LS

- Shutter diaphragm with pushbutton control
- Bulb and shutter diaphragm controlled via serial interface
- Suitable for fluorescent applications
- Shutter response time < 100 ms
- Connection to LAS possible (see figure)



Leica CLS 150 XD

- Increased power
- Bulb with greater voltage range (100–240 V)
- Ripple-free power supply
- Electronic and mechanical brightness control
- Color temperature display
- Connection for manual remote control with memory function for electronic brightness control
- Remote socket for serial interface (RS 232) for computer-aided control
- Synchronous control of several devices possible
- Suitable for use in clean rooms
- Additionally equipped with swing-in lens
- Connection to LAS possible (see figure)

Leica cold light source comparison

	CLS 150 X					
	CLS 50 X	CLS 100 X	CLS 150 XC	CLS 150 XE	CLS 150 LS	CLS 150 XD
Bulb (Watt)	30	100	150	150	150	150
Continuous mechanical brightness control for constant color temperature	-	•	•	-	•	•
Continuous electronic brightness control	•	-	•	•	•	•
Continuous adjustable turbo stage	•	-	•	•	•	•
Swing-in lens	-	-	-	-	-	-
Shutter diaphragm	-	-	-	-	•	-
Color temperature display	-	-	-	-	-	•
Ripple free (100 Hz 2%)	-	-	-	-	•	•
Low noise level	••	•	•	•	•	•
Low vibration level	••	•	•	•	•	•
Low housing temperature	•	•	•	•	•	•
Thermal overload protection	-	•	•	•	•	•
Easy bulb replacement	•	•	•	•	•	•
Filter insert	•	•	•	•	•	•
Remote connection with memory	-	-	-	-	-	•
RS 232 interface	-	-	-	-	-	•
Synchronous brightness control for several light sources	-	-	-	-	-	•
Handle	•	•	•	•	•	•
Stackable without limiting functions	•	•	•	•	•	•
Soft Start for bulb protection	•	•	•	•	•	•
Minimal space requirements	•	•	•	•	•	•
Low weight	•	•	•	•	•	•

Technical data

		CLS 50 X	CLS 100 X	CLS 150 X / XE / XC	CLS 150 LS / XD
Item No	for 230/240 V	30 111 150	30 111 250 / 251 (UK)	30 111 350 / 450 / 850	-
	for 100/120 V	30 111 160	30 111 260	30 111 360 / 460 / 860	-
	for 100/240 V	-	-	-	30 110 481 / 480
Mains frequency		50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Power input		max. 50 VA	max. 125 VA	max. 200 VA	max. 200 VA
Bulb voltage adjustable		6V–11,9 V	11,8 V	13–21,4 V	11–21,4 V
Halogen reflector bulb		30 W/10,8 V	100 W/12 V	150 W/21 V	150 W/21 V
Primary fuse	for 230/240 V	H500 mAT	H800 mAT	H1,25 AT	H2,5 AT
	for 100/120 V	H800 mAT	H2,5 AT	H2,5 AT	-
Height/Width/Depth		120/148/268	120/148/268	120/148/268	120/148/268
Weight		1,25 kg	1,6 kg	1,7 kg	1,8 kg
Cooling		-	fan	fan	fan
Maximum light intensity:					
Light guide input Ø 6 mm		approx. 9 Mlx	approx. 14 Mlx	approx. 32 Mlx	approx. 35 Mlx
Light guide output Ø 6 mm		approx. 5 Mlx	approx. 8 Mlx	approx. 17 Mlx	approx. 19 Mlx
Color temperature		approx. 3200 K	approx. 3200 K	app. 3200 K (Pos. 6)	app. 3250 K (Pos. 6)
				app. 2850 K (Pos. 4)	app. 3050 K (Pos. 4)
Light guide diameter		9 mm	13 mm	13 mm	13 mm
Protection class		I	I	I	I
Mark of conformity		CE	CE	CE	CE

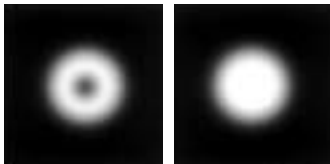


Unique Leica light guide

Fiber optics from Leica feature outstanding transmission speeds and optimum light distribution. The luminous flux is unrivalled in comparison with its competitors. A high quality fiber sheath prevents fibers from breaking. The light guide connection is also extremely heat resistant. This guarantees the highest quality and exceptionally long fiber optic life.

Optical element for increased light output

The development of a special optical element eliminates the dark spot in the middle of the illuminated work surface (occurs primarily with standard light guides with small light guide diameters), resulting in an increase in light output of up to 40%. Leica light guides with a diameter of less than 5 mm are equipped with this optical element as a standard feature.



Focusing lens attachment for ringlights deliver optimal illumination

An increase in the working distance results in a considerable reduction in light output. The newly developed focusing lens attachment for ringlights (standard feature for standard ringlights) allows optimal illumination regardless of working distance.

The following illumination advantages are possible over the same ringlights without a focusing lens attachment:



Working distance	Light quantity without lens attachment	Light quantity with lens attachment
60 mm	100 %	150 %
75 mm	100 %	200 %
100 mm	100 %	300 %
300 mm	100 %	700 %

The considerably higher light output allows various options:

- Use of a light source with lower output = cost reduction
- Use of a light guide with smaller diameter = cost reduction
- Light source operation at a lower output level to achieve considerably longer bulb life = cost reduction



Light guide overview



Flexible light guide

The light guides are available with one or two arms for point-illuminated area. The active diameter is 3 mm, 5 mm or 8 mm. The active diameter for TVC (transmitted vertical coaxial) illumination is up to 9 mm. An articulated support arm consisting of a base plate and a multi-directional articulated arm is used for attachment purposes.



Gooseneck light guides

The gooseneck consists of a metallic expansion tube, enabling precise point illumination from any desired direction. There is a choice of one, two and three arm versions with an active arm diameter of 3 mm or 4.5 mm. Gooseneck light guides are also available as ESD versions, i.e. any charge that may occur will be dissipated via/through the light source.



Combination light guides

This is a combination of a 2-arm gooseneck light guide with a flexible light guide, with the former being attached directly to the microscope stand. The active arm diameter is 4.5 mm.



Fiber optic line converter

For flat incident light illumination. The high light output and enhanced contrast of the integrated adjustable cylinder lens allows the optimal recognition of diverse surface structures and is available in different lengths and diameters.



Patented line converter attachment

For all flexible light guides, combination light guides and gooseneck light guides. Permits the optimal recognition of various surface structures.



Backlight

It is attached to the work surface of a stereo microscope and connected to the light source by means of a flexible light guide.

Ringlight overview

Ringlights are available as 6-segment ringlights and as continuous ringlights with various long, flexible connection leads. They can be attached directly to the stereomicroscope objective.

Special ringlights

Special ringlights with diverse dimensions and forms can be manufactured to the customer's specifications upon request.

*RL Ø 66 mm
with focusing lens*



*RL Ø 66 mm
ESD-version*



RL Ø 18 mm



RL Ø 25 mm



RL Ø 40 mm



RL Ø 58 mm



RL Ø 80/85 mm



*RL Ø 66 mm
90° angled*



Dark field ringlight



Maxi ringlight



Accessories

For the light source:



- **Slot-in filters:** Color filters can be used to achieve color sensations and subtractive color mixtures. Filters are available in the colors blue, green, yellow, red and as daylight filters. Filter holders are available with either the various filters or empty.



- **Remote control** for CLS 150 XD
Manual remote control
Remote control that can be connected to a computer via an external serial interface (RS 232).
Connection cable for the simultaneous operation of several light sources



- **Base plate**
Firmly attaching it to the underside of the light source, especially when using gooseneck light guides, greatly improves overall stability.

For flexible, gooseneck and combination light guides:



- **Filter and focusing lens attachment:** comprising a holder onto which the focusing lens and/or the desired filter can be screwed. Available as blue, green, yellow, red and daylight and polarisation filters.



- **Focusing lens** 20 (Ø 20 mm) and 26 (Ø 26 mm)
- **Diffuser:** Generates diffuse light and enables homogenous and shadow-free illumination



- **Articulated stand** for attaching flexible light guides
Base plate: With stable construction and anti-slip base
Articulated arm: Mounted either on the base plate or attached to the work surface using an M6 thread or an M8 adapter. Can be rotated in any direction and is attached by means of a fastening screw
Holder and adapter: For multipurpose, gentle light guide attachment

- **Adapters for combination light guides:**
Adapter for bulb holder 10445654
Adapter for stand Ø 25 mm
Adapter for 10447254

Accessories

For ringlights:



- **Polarizing filter set for RL 66:** Comprising a polarizer and analyser. To minimise reflections when examining highly reflective or transparent materials.

- **Polarizing filter set for RL 80:** As above, for 80 mm diameter.



- **Fluorescence filter set:** Comprising an excitation filter (slot for filter slide on the side of the unit) and a cut-off filter (mounted on ringlight) for fluorescence examination. Available in various wavelength ranges.

Fluorescence filter set: 420/500 nm

Fluorescence filter set: 470/540 nm

Fluorescence filter set: 505/580 nm

Fluorescence filter set: 530/600 nm

Fluorescence filter set: 570/640 nm



- **Diffuser:** Generates diffuse light for homogenous and shadow-free illumination



- **Segment shutter:** Moving the positioning slide masks a segment of the ringlight.



- **Adapter:** There are numerous adapters available for microscope objectives that do not have the standard diameter of 66 mm. It is possible to manufacture special adapters for individual requirements.



- **Adapter extension for dark field ringlight**

Technical data

Light guides and ringlights

Flexible light guide	<i>Length</i>	<i>Ø 3 mm</i>	<i>Ø 5 mm</i>	<i>Ø 8 mm</i>
1-arm	600 mm	30 150 111	30 150 121	-
	1000 mm	30 150 112	30 150 122	30 150 131
	1500 mm	30 150 113	30 150 123	30 150 132
	2000 mm	30 150 114	30 150 124	30 150 133
1-arm TVC			<i>Ø 5 mm</i>	<i>Ø 9 mm</i>
	500 mm	-	30 150 711	30 150 701
	750 mm	-	30 150 712	30 150 702
	1000 mm	-	30 150 713	30 150 703
	1500 mm	-	-	30 150 704
2-arm	600 mm	30 150 211	30 150 221	-
	1000 mm	30 150 212	30 150 222	30 150 231
	1500 mm	30 150 213	30 150 223	30 150 232
	2000 mm	30 150 214	30 150 224	30 150 233
2-arm for GZ6 (coaxial)	600 mm	-	30 150 229	-

Gooseneck light guide	<i>Length</i>	<i>Ø 3 mm</i>	<i>Ø 4,5 mm</i>
1-arm	500 mm	30 130 012	-
	600 mm	-	30 130 011
2-arm	500 mm	30 130 021	-
	600 mm	-	30 130 022
2-arm ESD	600 mm	-	30 130 422
3-arm	600 mm	-	30 130 031

Combination light guide	<i>Length flexible part</i>	<i>Length / Ø Gooseneck arm</i>	
2-arm	750 mm	450 / 4,5 mm	30 140 001
	1000 mm	450 / 4,5 mm	30 140 002
	1500 mm	450 / 4,5 mm	30 140 003
	2000 mm	450 / 4,5 mm	30 140 004

Ringlights	<i>Length light guide</i>	<i>Ø Light guide</i>	<i>Working distance min/max</i>	
6-point 66 mm	600 mm	5,4 mm	20 / 140 mm	30 120 106
	750 mm	7,6 mm	20 / 140 mm	30 120 101
	1000 mm	5,4 / 7,6 mm	20 / 140 mm	30 120 107 / 30 120 102
	1500 mm	5,4 / 7,6 mm	20 / 140 mm	30 120 108 / 30 120 103
	2000 mm	5,4 / 7,6 mm	20 / 140 mm	30 120 109 / 30 120 104
Continuous 66 mm	750 mm	9 mm	20 / 140 mm	30 120 201
	1000 mm	9 mm	20 / 140 mm	30 120 202
	1500 mm	9 mm	20 / 140 mm	30 120 203
	2000 mm	9 mm	20 / 140 mm	30 120 204
Continuous SE 66 mm	600 mm	6,2 mm	20 / 140 mm	30 120 206
Continuous ESD 66 mm	750 mm	9 mm	20 / 140 mm	30 120 401
Continuous 66 mm 90° angled	1000 mm	9 mm	20 / 140 mm	30 120 402
Continuous 18 mm	1000 mm	5,5 mm	15 / 40 mm	30 120 404
Continuous 25 mm	1000 mm	6 mm	20 / 50 mm	30 120 405
Continuous 40 mm	1000 mm	7 mm	35 / 90 mm	30 120 406
Continuous 58 mm	1000 mm	9,3 mm	30 / 120 mm	30 120 411
Continuous 80 mm	1000 mm	9,3 mm	30 / 150 mm	30 120 410 / 30 120 412
Continuous 85 mm (inkl. adapter 85/80)	750 mm	9,4 mm	15 / 60 mm	30 120 409
Continuous Maxi 188 mm	600 mm	12,7 mm	45 / 200 mm	30 120 303
Dark field ringlight	1000 mm	7 mm	10 / 45 mm	30 120 407

Line converter	<i>Length light guide</i>	<i>Dimensions</i>	
Line converter	800 mm	50 x 0,5 mm	30 170 112
Line converter	800 mm	100 x 0,5 mm	30 170 114

Accessories

Light sources

Filter frame without filter	30 118 701
Filter holder with filter blue	30 117 201
with green filter	30 117 202
with yellow filter	30 117 203
with red filter	30 117 204
with daylight filter	30 117 205
Remote control for CLS 150 D/XD	30 117 601
Serial interface (RS-232) for CLS 150 D/XD	30 117 603
Connector cable for CLS 150 D/XD	30 117 602
Base plate	30 117 209
Adapter for Schott standard light guides	30 117 701

Light guide / Gooseneck / Combination light guides

Articulated support arm	30 157 101
Base plate (with M6-threaded holes)	30 157 102
Holder for light guides	30 157 103
Adapters for holder	30 157 104
Adapter for M8	30 157 105
Filter and lens holder	30 161 101
Focusing lens 20	30 161 102
Focusing lens 26	30 161 110
Filter blue	30 161 103
green	30 161 104
yellow	30 161 105
red	30 161 106
Daylight	30 161 107
Polarisation	30 161 108
Diffuser	30 161 109
Backlight adapter	30 241 001
Line converter attachment	30 170 121
Adapter for bulb holder 10445654	30 143 001
Adapter for stand (Ø 25 mm)	30 143 002
ALA 3 Adapter for 10447254	30 143 003
Backlight adapter for sub-base	30 157 202

Ringlights

Diffusor	30 121 201
Segment shutter	30 121 202

Polarizing filter set 66 mm	30 121 101
Polarizer	30 121 102
Analyser	30 121 103
Polarizing filter set 80 mm	30 121 104
Polarizer	30 121 105
Analyser	30 121 106
Fluorescence filter set 420/500 nm	30 121 301
470/540 nm	30 121 302
505/580 nm	30 121 303
530/600 nm	30 121 304
570/640 nm	30 121 305
Excitation filter 420 nm	30 121 311
470 nm	30 121 312
505 nm	30 121 313
530 nm	30 121 314
570 nm	30 121 315
Cut-off filter 500 nm	30 121 321
540 nm	30 121 322
580 nm	30 121 323
600 nm	30 121 324
640 nm	30 121 325
Adapter:	
MS5/MZ6 (Achr. obj. 1x/0.8x/0.63x/0.32x)	30 123 101
MS5/MZ6 (Achr. obj. 1.5x)	30 123 102
MS5/MZ6 (Achr. obj. 2.0x)	30 123 103
MZ420 (Obj. Macro/Apo Zoom)	30 123 104
M5A (Achr. obj. 2.0x/1.5x/1.0x)	30 123 105
MZ6 (Obj. 411597)	30 123 106
66/58	30 123 107
GZ6 (Working distance > 150 mm)	30 123 121
GZ4	30 123 131
70/66	30 123 132
70/58	30 123 134
70/53	30 123 135
85/80	30 123 136
Maxi RL (10445617)	30 123 301
Maxi RL (10445945)	30 123 302
Maxi RL (10447254)	30 123 303
Adapter extension for dark field RL	30 123 133

The system at a glance

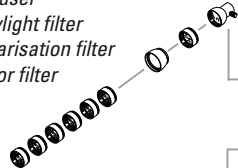
Light guide accessories

Adapters and holders



Optical element

Filter and focusing lens attachment:
Holder
Focusing lens
Diffuser
Daylight filter
Polarisation filter
Color filter



Articulated support arm:

Holder and adapter
Articulated arm
Base plate



Light guides

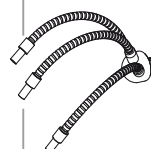
Gooseneck light guide 1-arm



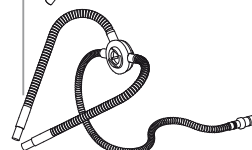
Gooseneck light guide 2-arm



Gooseneck light guide 3-arm



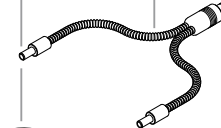
Combination light guide 2-arm



Flexible light guide 1-arm



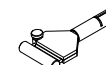
Flexible light guide 2-arm



Backlight



Line converter attachment



Ringlight accessories

Ringlights

Light sources + Accessories

for RL 66 and
RL 66 vertical:

Adapter

Focusing lens

Polarizing filter
set (Ø 66 mm):
Polarizer
Analyser

Diffuser

Segment shutter

Fluorescence filter set:
Cut-off filter
Excitation filter

for RL 80:

Polarizing filter set
(Ø 80 mm):
Polarizer
Analyser

For dark-field
ringlight:

Adapter extension

Ringlight
Ø 18 mm

Ringlight
Ø 25 mm

Ringlight
Ø 40 mm

Ringlight
Ø 66 mm

Ringlight
Ø 66 mm
with vertical
light guide

Maxi-
Ringlight

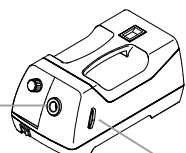
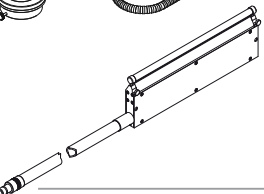
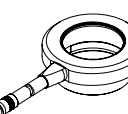
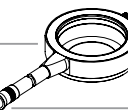
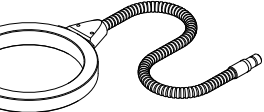
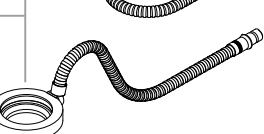
Ringlight
Ø 58 mm

Ringlight
Ø 80 mm

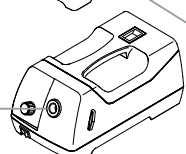
Ringlight
Ø 85 mm

Dark-field
ringlight

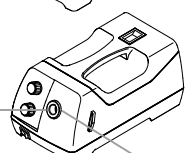
Line
converter



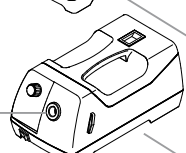
CLS 50 X



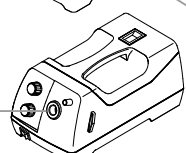
CLS 100 X



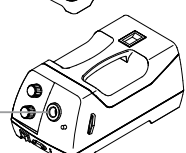
CLS 150 X



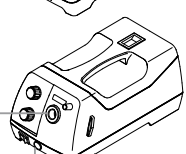
CLS 150 XE



CLS 150 XC



CLS 150 LS



CLS 150 XD

for all
light sources:

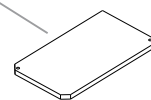


Slot-in filters
blue
green
yellow
red
daylight

Adapter for
Schott light guides

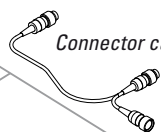


Base plate

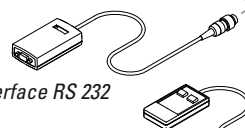


for CLS 150 XD:

Connector cable



Interface RS 232



Manual remote control

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