ENOVATION CONTROLS®
A HELIOS COMPANY

PowerView® U150

Installation Manual

00-02-1229
2023-09-15
Section 78

To consistently bring you the highest quality, full-featured products, we reserve the right to change our specifications and designs at any time. The latest version of this manual can be found at support.enovationcontrols.com.

Warranty - A limited warranty on materials and workmanship is given with this Enovation Controls product. A copy of the warranty may be viewed or printed by going to www.enovationcontrols.com/warranty

WARNING

BEFORE INSTALLING THIS ENOVATION CONTROLS PRODUCT:

Read and follow all installation instructions.

Please contact Enovation Controls immediately if you have any questions.

This product can expose you to chemicals including lead, which is known to the State of California to cause cancer. For more information, go to www.P65Warnings.ca.gov.

Revision Table			
Date	**Description**	**Date**	**Description**
2023-09-15	Initial Draft		

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Hardware Installation

The following instructions will guide you through installing the PowerView® U150 display.

Inspecting Package Contents

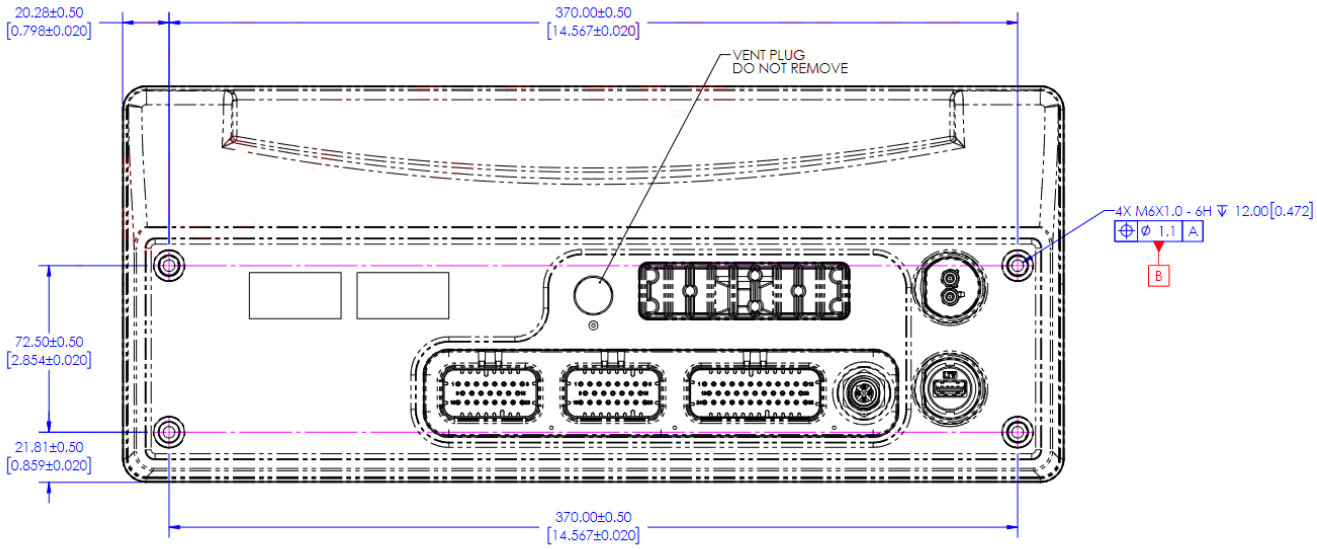
Before installing the product, it is recommended that you ensure all parts are accounted for and inspect each item for damage (which sometimes occurs during shipping). The items included in the box are:

- PowerView 150 15” unit

Surface-Mounted Installation

To properly mount the display, first prepare the dashboard:

1. Use the measurement diagram shown below to create a clearance cutout for the connectors.
2. Using the provided measurements drill four locating holes for the fasteners.
3. Use M6 fasteners to mount the display using the four provided threaded inserts.



BACK VIEW

Hardware needed

- Four (4) M6 Fasteners

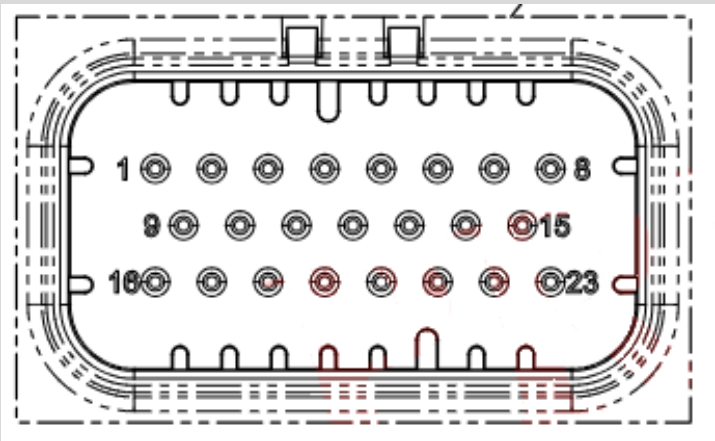
Tools needed:

- Rotating drill with a bit size of 6.2mm.

Pinout Specifications

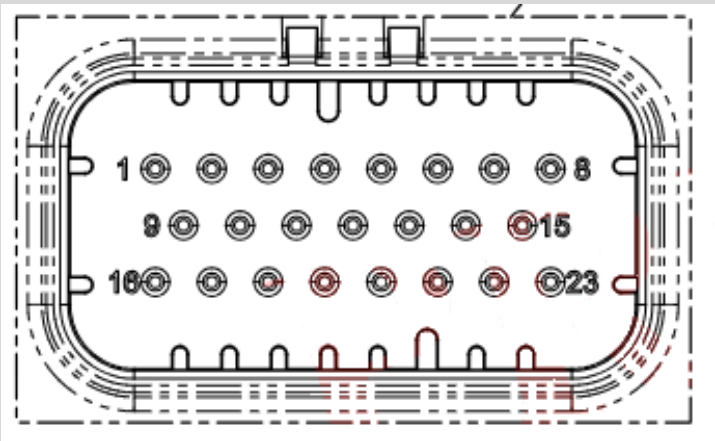
23 Pin Connector A (Mating Connector AMP 770680-1 Black)

Pin	Function
1	Digital In 1
2	Analog In 3
3	Analog In 2
4	Analog In 1
5	CAN 1 L
6	CAN 1 H
7	Battery
8	Ground
9	Analog In 3 Return
10	Analog In 2 Return
11	Analog In 1 Return
12	Digital In 3
13	Digital In 2
14	Frequency Out 1
15	Ignition
16	No Connect
17	No Connect
18	CAN 2 L
19	CAN 2 H
20	Digital In 4
21	Digital In 5
22	Open Drain Out
23	Frequency Out 2



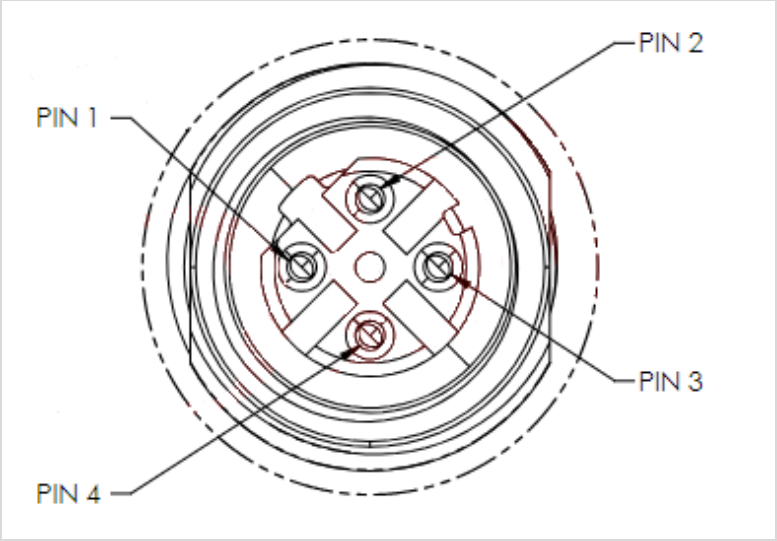
23 Pin Connector B (Mating Connector AMP 770680-4 Gray)

Pin	Function
1	Video In 1 P
2	Video In 2 P
3	Video In 3 P
4	RS485 H
5	RS485 L
6	Line Out 1 Right N
7	Line Out 1 Right P
8	Line Out 1 Left N
9	Video In 1 N
10	Video In 2 N
11	Video In 3 N
12	Radio Control VIN
13	Frequency In
14	Frequency In Return
15	Line Out 1 Left P
16	USB 1 N
17	USB 1 P
18	USB1 VBUS
19	USB1 Ground
20	USB1 Shield
21	Radio Control Bus
22	Radio Control Shield
23	Radio Control Ground



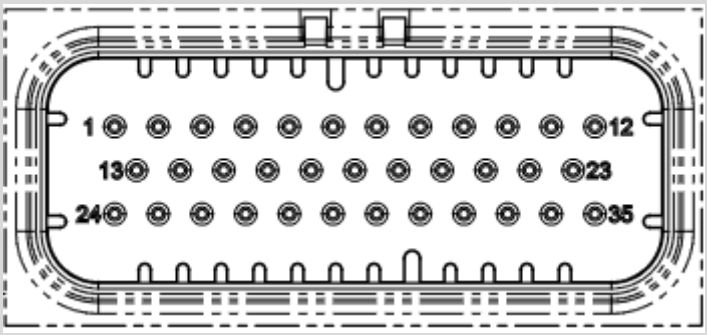
4 Pin Connector-D (Mating Connector M-12, 4 POS, D-Coded, Male)

Pin	Function
1	Ethernet TX +
2	Ethernet RX +
3	Ethernet TX -
4	Ethernet RX -



35 Pin Connector (Mating Connector AMP 776164-1 Black)

Pin	Function
1	Video In 4 P
2	Video In 4 N
3	A2B P
4	A2B N
5	Line In 1 Left
6	Line In 1 Left Return
7	Line In 1 Right
8	Line In 1 Right Return
9	Line In 2 Left
10	Line In 2 Left Return
11	Line In 2 Right
12	Line In 2 Right Return



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Pin	Function	
13	A2B Shield	
14	A2B Ground	
15	A2B 5V	
16	Line Out 5 Left P	
17	Line Out 5 Left N	
18	Line Out 4 Left P	
19	Line Out 4 Left N	
20	Line Out 3 Left P	
21	Line Out 3 Left N	
22	Line Out 2 Left N	
23	Line out 2 Left P	
24	Amp Turn-on 3	
25	Amp Turn-on 2	
26	Amp Turn-on 1	
27	No Connect	
28	Line Out 5 Right P	
29	Line Out 5 Right N	
30	Line Out 4 Right P	
31	Line Out 4 Right N	
32	Line Out 3 Right P	
33	Line out 3 Right N	
34	Line Out 2 Right P	
35	Line Out 2 Right N	

IMPORTANT NOTE: Per IEC 62368-1 requirement the equipment needs to be protected in case of excessive input power. It is recommended that an external fuse be added to the wiring to limit the input power to the device and remove the electrical energy completely in case of a fault. Adding an external fuse is a way of protecting your electrical devices from overcurrent or short circuits. It involves connecting a fuse holder and a fuse to an existing circuit, usually using a fuse tap or a wire splice. The fuse rating should match the current draw of the device you are powering.

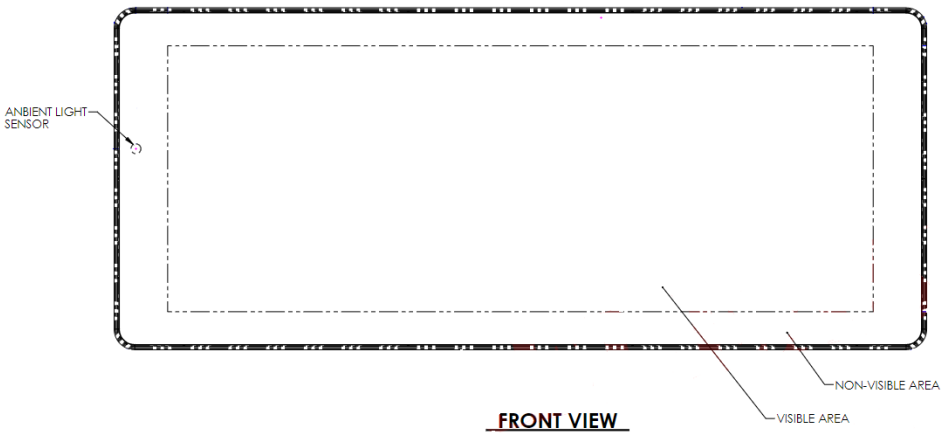
This same recommendation should also be applied to the output pins due to 1) being powered separately and 2) their sinking current.

Software Platform

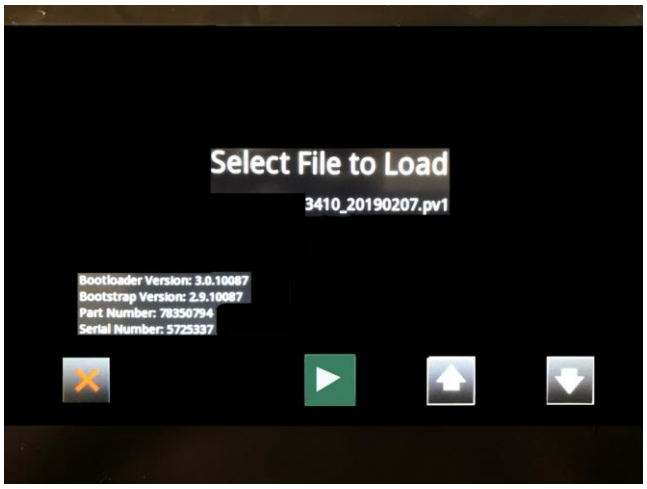
Supported by PowerVision Configuration Studio®

Configuration Information

Follow these steps to download a custom configuration to the U150 display:

Step	Action
1	Turn off the display.
2	Insert the USB drive that contains the new configuration file into the display's attached USB pigtail.
3	Place a strong magnet either directly over the Ambient Light Sensor (ALS) depicted below or on the housing to the left of the ALS. 
4	Power the display back on, continually holding the magnet in place.

Continued

Step	Action
5	Remove the magnet when the display shows the utility for loading new software. 
6	Touch the up or down arrow buttons on the screen until the appropriate configuration file from the USB to be loaded into the display is shown on the screen.
7	Press the right arrow/green arrow button on the screen twice to load the selected configuration.
8	Once completed, the unit will reboot into the loaded application.

Customer-Provided Equipment

ANTENNA

Specifications

Computing	
Main Processor:	Renesas® R-Car M2 with Arm® Cortex-A15 dual core processor @ 1.5 GHz (32-bit)
Operating System:	QNX® Real-time Operating System
Storage:	16 GB
Ram:	1 GB
Display	
Type:	15” (381 mm) LED backlight LVDS TFT LCD 24-bit color
Resolution:	1920 x 720
Contrast Ratio:	1000:1 (typical)
Brightness:	1000 cd/$m^{2,}$
Surface:	Anti-glare and hard coating
Touch Panel:	Projected capacitive (PCAP)
Hardware	
Real-time Clock:	Li-Ion battery backup (Typ. Lifespan minimum 10 years), non-rechargeable, non-replaceable
Connectors:	(2) Ampseal 23 Pin (1) Ampseal 35 Pin (1) M12 4 Pin (1) USB Pig Tail (1) Radio Antenna Jack
Video Inputs:	(3) NTSC/PAL (Single channel viewable)
Audio Outputs (Optional)	See bottom of table for complete Infotainment summary

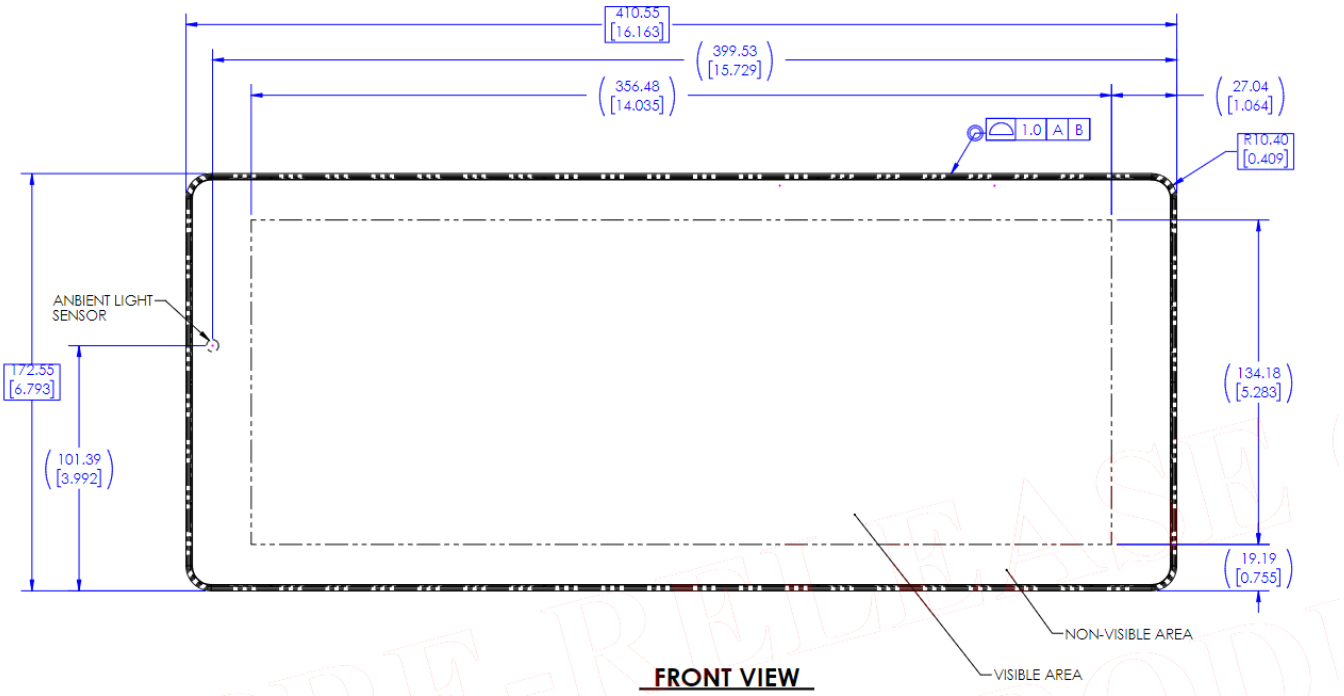
Continued

Communication	
CAN:	(2) CAN 2.0B according to TSC1 messaging, J1939, NMEA2k and CANopen, proprietary messaging
USB:	(2) USB-A
Serial:	(1) RS-485 Serial (MODBUS master/slave)
Ethernet:	(1) 10/100 Base-T
Wi-Fi:	802.11 b/g
Bluetooth :	Fully integrated Bluetooth 2.1, Class 1
Electrical	
Operating Voltage:	6 – 32 VDC, 12- or 24- V, reverse polarity protected
Outputs:	(1) 500 mA Switched Low-side (1) Frequency Out (2Hz – 3kHz)
Inputs:	(3) Analog 0-5 VDC, 4-20mA, Resistive, 10-bit resolution (5) Discrete digital, active high (1) Frequency input
Environmental	
Operating Temperature:	-30°C to +70°C (-22°F to +158° F)
Storage Temperature:	-30°C to +85°C (-22°F to +185° F)
Protection:	IP66 and IP67
Vibration:	ISO 15003: 3.9 Grms (10 - 350Hz), 3 axis
Shock:	± 50G in 3 axes
EMC/EMI:	SAE J1113 ISO 7637-2 ISO 11452 ISO 13766 ISO 16750-2 CISPR 25 EN 13309 CE Mark per 2014/30/EU (EN 61326-1 & EN 60945)
Compliance:	RoHS and REACH Compliant

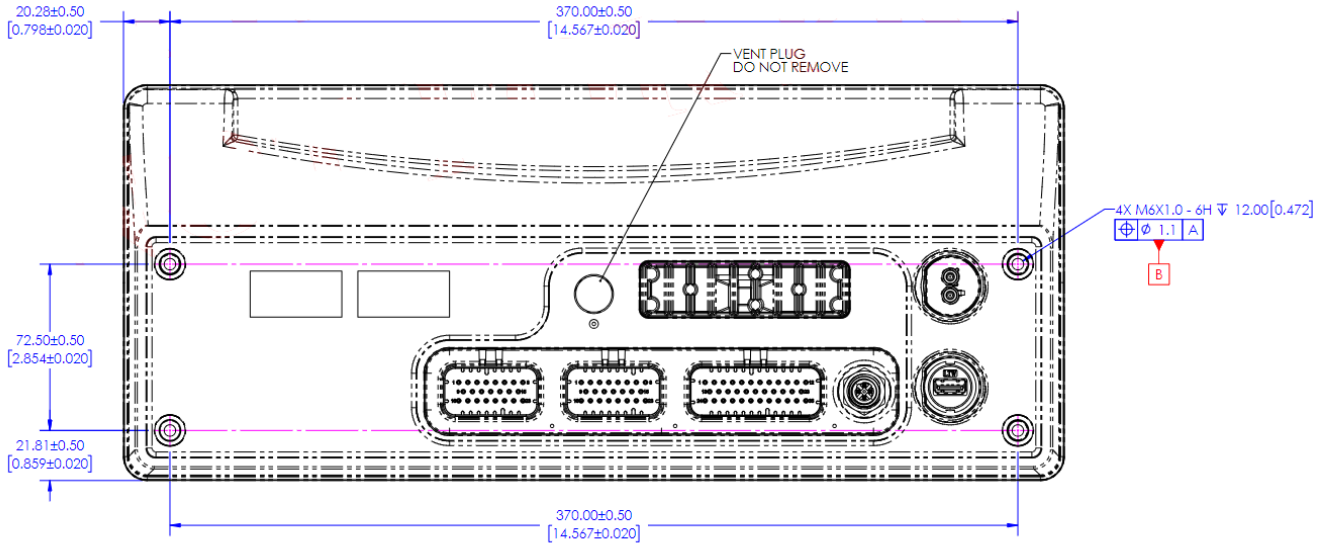
Infotainment Summary

Stereo	(4) Outputs (20Hz-20KHz) (1) Subwoofer (configurable, 30Hz-250Hz) (2) Auxiliary Inputs (3) Amp Turn On/Accessory
FM Tuner	Frequency Range: 64.0Mhz – 108.0Mhz (Worldwide band support) Sensitivity: -5dBµV typical @ 26dB SINAD (64.0MHz – 75MHz) -7dBµV typical @ 26dB SINAD (76.0MHz – 108MHz) RDS Sensitivity: 9.5dBµV typical AM Suppression: 58 dB typical Alternate Channel Selectivity: 70dB Stereo Separation: 45dB typical Frequency Response: 30Hz-15kHz
AM Tuner	Frequency Range: 520kHz-1710kHz (Worldwide band support) Sensitivity: 26dBµV typical @ 20dB SINAD (Automatic Gain Control disabled)
WX Tuner (North America Version)	Frequency Range: 162.4MHz-162.55MHz Sensitivity: -6dBµV typical @ 12dB SINAD
DAB/DAB+ Tuner (International Version)	Frequency Range: 168.0MHz – 240.0MHz Sensitivity: -101.5dBm typical (with FM intrusion filter)
USB Media	MP3, M4A Playback
Bluetooth	Audio Streaming

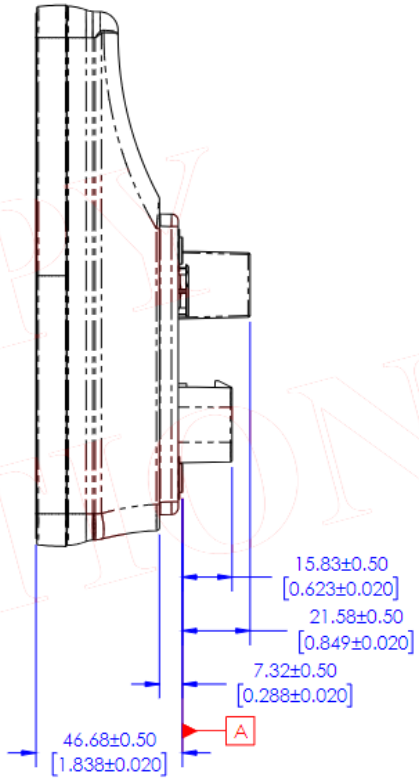
Dimensions



FRONT VIEW



BACK VIEW


15.83±0.50
[0.623±0.020]
21.58±0.50
[0.849±0.020]
7.32±0.50
[0.288±0.020]
A
46.68±0.50
[1.838±0.020]

SIDE VIEW

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