

Ethernet/DALI Interface – 2 DALI Lines



PATENT PENDING
REGISTERED DESIGN



Designed in Australia to
meet Australian Standards
and installation conditions



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This product complies with the requirements for the use of the DALI Trademark.

This product uses technology supplied by Lantronix, Inc. Assignment of Internet Protocol (IP) addresses is supported using Dignet Lighting Management software as well as the DeviceInstaller software from Lantronix. More information is available at www.lantronix.com.

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1. Product Item

This guide provides installation, configuration and product specification information for the Diginet Lighting Management System Ethernet/DALI Interface device **DGLMIFE02**.

2. Important Notes and Safety Information

WARNING – Electric shock may result in serious injury or death. Follow all warnings in this guide and on the product while working in accordance with the latest electrical safety practices.

- ❖ The Ethernet/DALI Interface does not have a mains supply connection. DALI lines operate on an ELV dc supply between 9.5V and 22.5V and must be considered at **mains** potential due to equipment isolation and cable segregation between the two supplies. The installer must be suitably qualified and should work in accordance with standard safety procedures for mains-powered electrical equipment.
- ❖ Appropriate segregation is to be maintained between the Ethernet cabling and mains/DALI line cabling in accordance with local regulations.
- ❖ There are no user serviceable parts inside the interface device. Do not attempt to disassemble or operate the interface device with any covers removed.
- ❖ The interface device is intended for indoor use in a typical switchboard enclosure. Outdoor installations will require the interface device to be housed in a suitable IP rated enclosure.
- ❖ The use of any non Diginet Lighting Management System software with the interface device may void any warranties applicable to the hardware.
- ❖ Consult the manufacturer's instructions for ballasts, LED drivers and other DALI equipment that may be connected to the DALI lines.

If you require information or assistance regarding the installation, configuration, or operation of the interface device, contact Technical Services at Diginet Control Systems. Contact details are on the back cover of this guide and at www.diginet.net.au.

3. Product Summary

The interface device is part of the Diginet Lighting Management System which incorporates the **Digital Addressable Lighting Interface (DALI)** open standard protocol for lighting.

The device provides an isolated communication path between an Ethernet network and two DALI lines. The control, monitoring or programming of DALI enabled luminaires and emergency lighting items can be performed by a PC or similar at any location with LAN connectivity (wired/wireless) to the interface device including remote from the installation.

4. Product Capabilities

The Ethernet/DALI Interface supports two DALI lines and each line can have up to 64 DALI addressable devices such as LED Drivers, Fluorescent Ballasts, and Emergency Lighting Drivers. Current draw by the interface device for each DALI line is 4mA nominal.

Programming of short addresses on DALI devices and identification of device type is achieved using the Diginet Lighting Management software.

Multiple Ethernet/DALI Interface devices may be installed and operate as a single system; however appropriate IP network address and subnet configuration must be considered. The Ethernet/DALI Interface has the following capabilities:

- ❖ Operates with 10/100/1000 Mbits/sec twisted pair network types;
- ❖ Supports SNMP monitoring for managed networks;
- ❖ Optionally supports DHCP for address assignment (refer Section 6);
- ❖ Connection on the device uses an RJ45 8 pin socket (T568A termination).

5. Installation and Wiring Connections

The Ethernet/DALI Interface device is mounted on DIN rail which **must** be installed horizontally in a suitable switchboard enclosure. Where required, multiple interface devices can be mounted on a common DIN rail with DALI power supplies and the SELV power supplies to power the interface.

The interface device should be installed/connected by a suitably qualified person as the DALI lines are to be considered as “live mains” as previously outlined in Section 2. It is the responsibility of the installer to ensure the interface device and associated power supply is connected in accordance with local wiring regulations. Figure 1 details the terminations required for the interface device.

The DALI line terminals and the SELV power supply terminals are both sized to allow 3x1.5mm² or 2x2.5mm² (solid or stranded) conductors to be terminated.

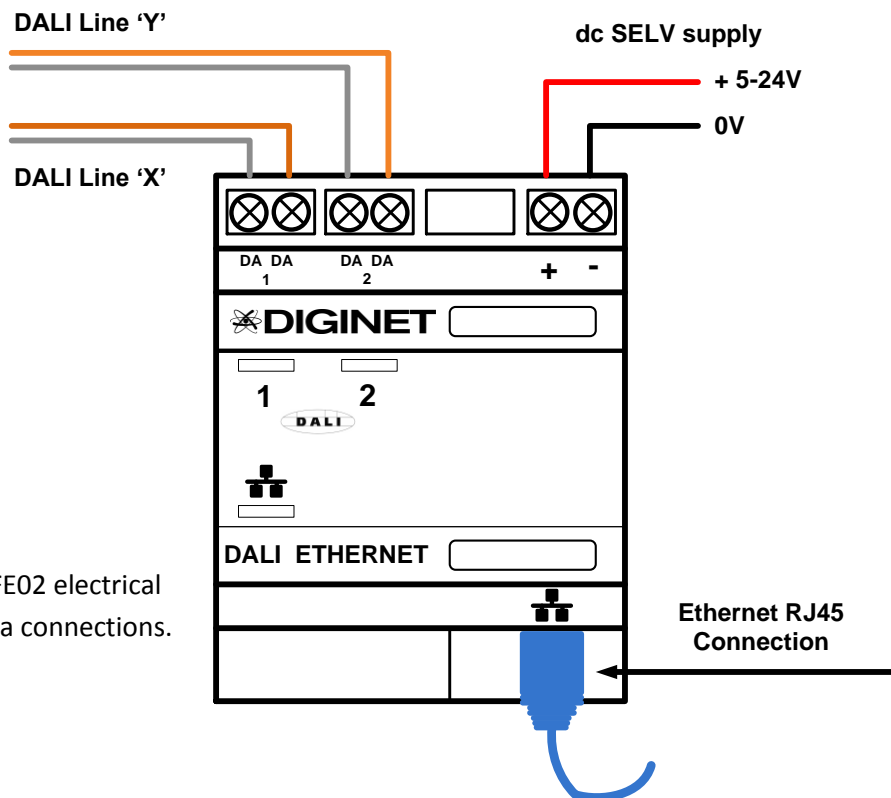


Figure 1 – DGLMIFE02 electrical and data connections.

An external SELV power supply (DIN enclosure or plug pack) within the range of 5-24V dc is required to power the interface device. Multiple interface devices can be powered from a common power supply with the necessary capacity. Each interface device requires an allowance of 2.5VA when calculating how many interface devices are to be connected to a common SELV power supply.

Suitable DIN power supplies are available from Diginet Control Systems:

- ❖ Capacity for up to 4 interface devices in a 1 DIN module enclosure
- ❖ Capacity for up to 6 interface devices in a 2 DIN module enclosure

A clamp-on ferrite filter (supplied) is to be fitted to the SELV cable connection on each interface device at the dc supply point. Where multiple interface devices are supplied by a common SELV power supply with a loop in and out of the cable at the interface device, both cables are to be put through the clamp-on ferrite filter. Refer to Figure 2 for further information on the ferrite filter installation requirements.

The RJ45 Ethernet cable must maintain the required segregation from DALI line cabling in accordance with local regulations.

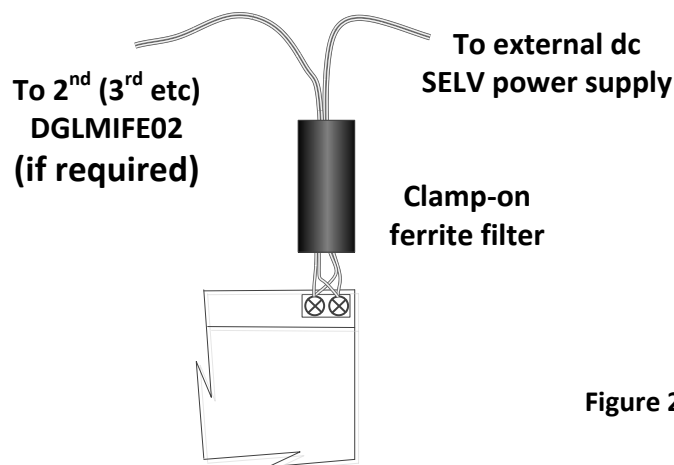


Figure 2 – Clamp-on ferrite filter installation for single and multiple devices.

It is recommended to connect the 5-24V dc SELV power supply as well as the DALI power supply units to a dedicated control circuit rather than a lighting circuit. Where possible, this control circuit should be connected to a back-up power system (UPS and/or generator). This will ensure the DALI system will remain powered and allow control/monitoring of lighting that may be connected to circuits that also have back-up power in the event of mains failure.

6. Configuration and Serial Numbers

To operate correctly, each Ethernet/DALI Interface on the system must be configured with a static IP address. It is recommended the installer liaise with the appropriate IT staff/department to review and plan the quantity of IP addresses and the allocated range of addresses.

A new interface with factory settings requires an initial IP address to be assigned in order to view and subsequently set the nominated static IP address using the Diginet Control Systems software. The initial IP address can be achieved in two ways:

- ❖ Connect the interface device on a network which uses a DHCP server; the device will obtain an IP address automatically.
- ❖ Connect the interface device to a PC with an RJ45 patch lead; the device will set an IP address.

When connected, run the Dignet Control Systems software to display the interface device which will allow the setting of the nominated static IP address. Refer to Figures 3 and 4 for an example of the programming details.

NOTE – It is recommended to pre-configure the interface devices with the allocated static IP address for the system prior to installing the devices in the enclosure.

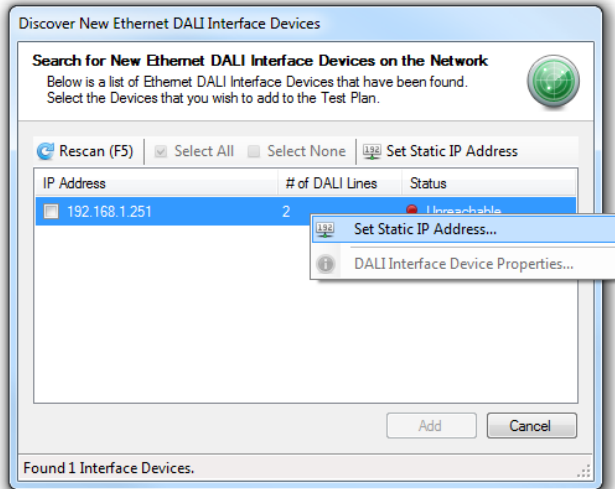


Figure 3 – Select the interface device in the Dignet Control Systems software to modify the IP address.

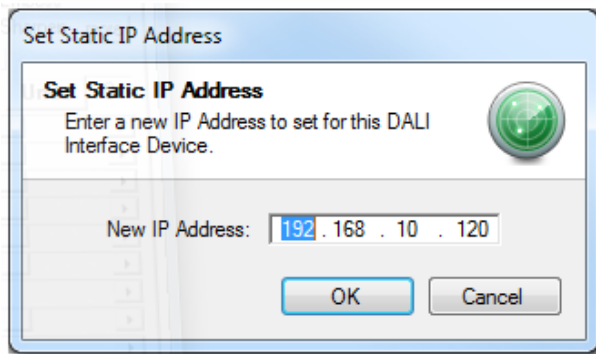


Figure 4 – Set the static IP address.

The Ethernet/DALI Interface front screen has hidden tabs that contain the unique serial number in bar code form, IP MAC address, and the manufacture date for the device. The top tab on the right side is blank and can be used to record the static IP address or identify the location of the DALI lines as shown in Figure 5.

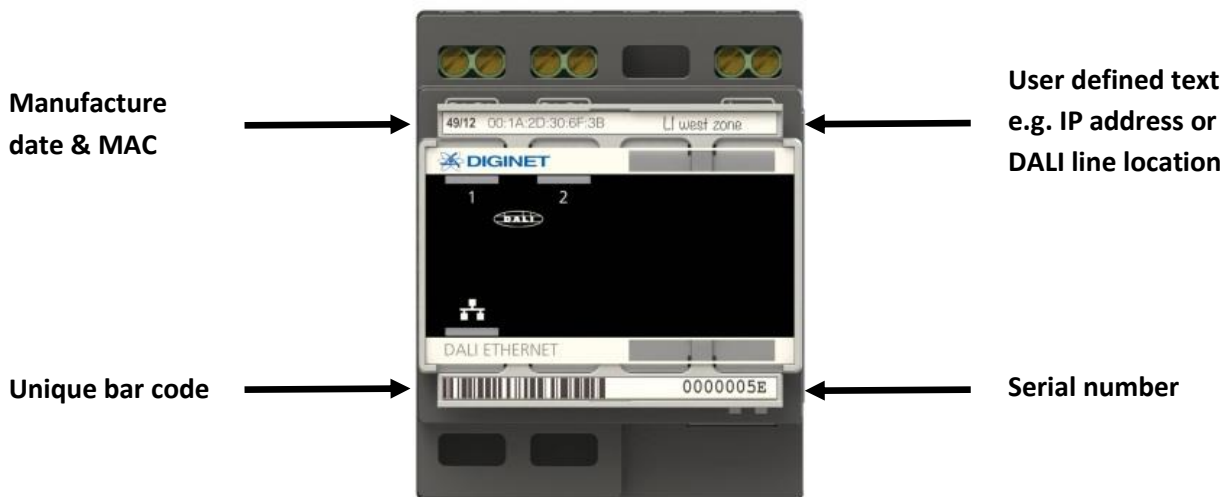


Figure 5 – Hidden tabs open showing device information.

7. Operation and Indicators

When the interface device is powered and functional, the indicators will be active and display according to the status of the DALI lines and Ethernet connection. Figure 6 shows the location of the DALI line and Ethernet indicators.

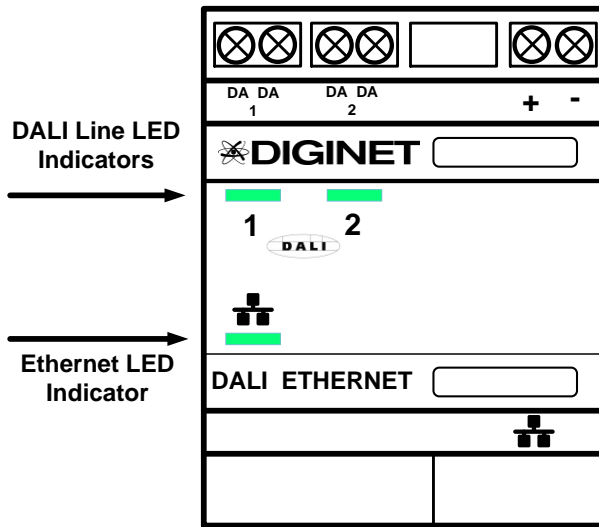


Figure 6 – Indicator locations.

DALI Line Indicators

Indicator Operation	Outcome
Green – on with brief flash off every 2-3 seconds	Correct operation and DALI power supply present
Off with a brief flash on every 2-3 seconds*	DALI line power is not functioning correctly. Check the: <ul style="list-style-type: none"> ❖ DALI power supply is connected and delivering the correct voltage/current ❖ DALI line for short circuit condition ❖ DALI line for a 220/240V mains supply connection
Off*	No SELV dc power to the interface device

Ethernet Indicator

Indicator Operation	Outcome
Green – on with an occasional blink to off	Correct operation indicating Ethernet traffic
Off	Ethernet connection not present – check switch/hub for power and correct patch lead connections

* The interface device has been connected to both SELV and DALI line power for a minimum period of 30 seconds.






8. Power Surges

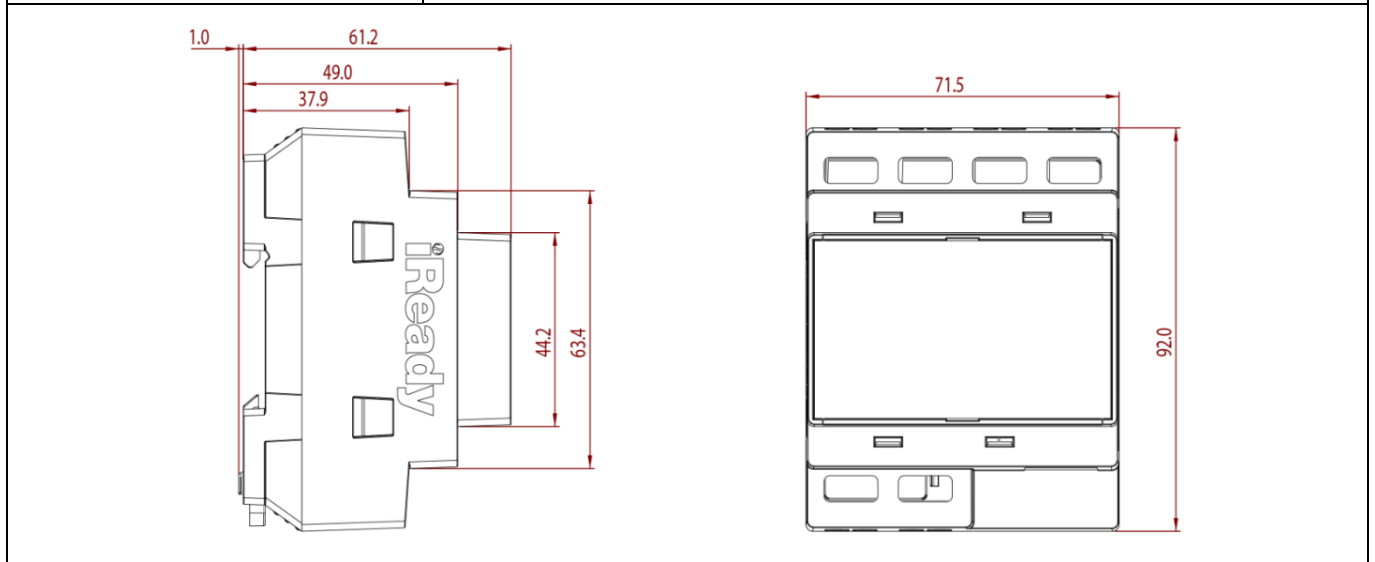
The Ethernet/DALI Interface device has no mains connection. However induced voltages or surges may occur on electrical circuits and communication cabling in an installation as a result of excessive voltages from external influences which can damage electronic equipment. It is strongly recommended that the electrical and data installation be fitted with suitable over-voltage protection at the electrical switchboard and IT cabinets to avoid these situations.

9. Insulation Resistance Testing

It is generally not a requirement to perform an IR test on DALI lines. In the event it is required, the DALI line cables must be disconnected from the interface device to conduct the test and then reconnected.

10. Product Specifications

Parameter	Specification
Input voltage	5 to 24V dc
Input power	1.2VA (active)/2.5VA (start-up)
DALI line capacity	2
DALI line operating voltage	18V dc (nominal) on each line supplied by external DALI power supply
DALI line current draw	4mA per line
Frequency	50/60Hz
Isolation	≥3.75kV ac Ethernet RJ45 to DALI line terminals
	≥1.5kV ac Ethernet RJ45 to SELV (5-24V dc) terminals
Start-up time	30 sec
Ethernet	10/100/1000Mbps/sec twisted pair network types
	Supports SNMP monitoring for managed networks
	DHCP support – contact Diginet Control Systems
Ambient operating temperature	0 to 50° C
Ambient storage temperature	-10 to 70° C
Humidity	0% to 95% RH non condensing
Ethernet connection	RJ45 8 pin plug (T568A termination)
DALI line terminals	Screwed – 3 x 1.5mm ² or 2 x 2.5 mm ² solid/stranded
dc supply terminals	Screwed – 3 x 1.5mm ² or 2 x 2.5 mm ² solid/stranded
Ingress protection	IP20
Materials	Enclosure/fascia – flame resistant polycarbonate
	DIN rail clip – ABS
Weight	160 grams
Dimensions – 4 DIN modules	92 x 71.5 x 62.2 (H x W x D in millimetres)
Approvals and compliance	    



11. Standards and Compliance

The DGLMIEF02 product is designed to meet/exceed the following Australian and International standards:

Australian/New Zealand EMC and Electrical Safety Frameworks and Standards

Regulation	Standard	Title
EMC	AS/NZS CISPR 22:2009	Information Technology Equipment – Radio Disturbance Characteristics – Limits and Methods of Measurement
	AS/NZS CISPR 22-A:2010	
Electrical Safety	AS/NZS 60950-1:2011	Information Technology Equipment – Safety

The product is in conformity with the essential requirements of the following EC Directives and accordingly carries the CE marking.

EC Council Directive	Title
2006/95/EC	Low Voltage
2004/108/EC	Electromagnetic Compatibility (EMC)
2011/65/EU	Restriction of Hazardous Substances (RoHS) in Electrical and Electronic Equipment

Other International Directives and Standards

Regulation	Standard	Title
Digital Addressable Lighting Interface (DALI)	IEC 62386-101	Digital Addressable Lighting Interface – Part 101: General Requirements – System
	IEC 62386-102	Digital Addressable Lighting Interface – Part 102: General Requirements – Control Gear

12. Product Warranty

The Ethernet/DALI Interface device has a two-year warranty against manufacturing defects in accordance with the following terms:

1. Nothing in this Warranty affects any person's rights under the Australian Consumer Law. The benefits to any person under the DIGINET Warranty are in addition to the rights and remedies available under any Consumer Guarantees.
2. Subject to the other clauses of this Warranty, DIGINET warrants that the Goods will be free of manufacturing defects and will perform to DIGINET's specifications.
3. The benefit of the DIGINET Warranty extends only to the owner of the property in which the Goods are installed (the Owner) for two (2) years after the date of purchase (Warranty Period).
4. If within the Warranty Period the Goods fail to perform to DIGINET's specifications as a result of some defect in material or workmanship in the Goods (Defect) then DIGINET will, at its option, repair the Goods or supply replacement Goods free of charge.
5. The DIGINET Warranty will not apply to Goods:
 - 5.1. installed by any person other than a qualified tradesperson; or
 - 5.2. subjected to misuse, neglect, negligence or accidental damage; or
 - 5.3. operated in any way contrary to any operating or maintenance instructions; or
 - 5.4. improperly handled, installed or maintained; or
 - 5.5. altered or modified prior to or after installation.
6. The DIGINET Warranty does not apply to faulty or defective design of Goods unless DIGINET has designed the Goods and DIGINET expressly accepts responsibility for such design in writing.
7. In order to make a claim under the DIGINET Warranty, the Owner must:
 - 7.1. contact DIGINET to obtain a Returned Goods Authorisation Number for the Goods and to be notified of DIGINET's return address for the Goods by:
 - 7.1.1. freecall **1300 95 DALI (3254)**; or
 - 7.1.2. post to **PO Box 314, Padstow NSW 2211**; or
 - 7.1.3. fax to **1300 95 3257**; or
 - 7.1.4. email to sales@diginet.net.au.
 - 7.2. return the Goods at the Owners expense to the return address notified by DIGINET together with all accessories, instructions, specifications or other material supplied with the Goods and a notice in writing:
 - 7.2.1. stating the Returned Goods Authorisation Number for the Goods;
 - 7.2.2. describing in detail the defect or fault in the Goods;
 - 7.2.3. setting out the Owner's contact details (including postal address, email address and telephone numbers at which the Owner can be contacted during usual business hours).
 - 7.3. DIGINET will not accept any returned Goods which have not been returned strictly in accordance with the above instructions.
8. DIGINET will examine any returned Goods and if DIGINET determines that they are defective through no fault of the Owner and are otherwise undamaged, DIGINET will repair or replace the Goods free of charge.
9. DIGINET will notify the Owner whether it accepts the Goods are defective within a reasonable time of return.
10. DIGINET will not be responsible for any costs of de-installation, re-installation, returning Goods or for redelivery of the Goods (whether original or repaired and/or replacement Goods) by DIGINET and any other related expenses of the Owner in claiming under the DIGINET Warranty.
11. DIGINET will not be responsible for any loss or damage to the Goods occurring while the Goods are in transit (either on return to DIGINET or upon redelivery to the Owner of the original or repaired and/or replacement Goods).
12. DIGINET will not be responsible (whether arising in contract or tort (including negligence) or under any statute) for any special, indirect, incidental, consequential or economic losses or damages (including loss of data, business, profits, revenue, anticipated savings, bargain, opportunity or goodwill) whether or not the possibility of those losses or damages being suffered had been brought to the attention of DIGINET.

The Australian Consumer Law requires the inclusion of the following statement with the DIGINET Warranty:

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.



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