Installation Instructions

SLC ControlNet Scanner Module

Catalog Number 1747-SCNR

Use this document to help you install the ControlNet™ 1747-SCNR Scanner module.

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Publication 1747-5.36 - May 2000

Prevent Electrostatic Discharge

The scanner module is sensitive to electrostatic discharge.

ATTENTION

Electrostatic discharge can damage integrated circuits or semiconductors if you touch backplane connector pins. Follow these guidelines when you handle the module:

- touch a grounded object to discharge static potential
- wear an approved wrist-strap grounding device
- do not touch the backplane connector or connector pins
- do not touch circuit components inside the module
- if available, use a static-safe work station
- when not in use, keep the module in its static-shield bag

Compliance to European Union Directives

If this product has the CE mark, it is approved for installation within the European and EEA regions. It has been designed and tested to meet the following directives.

EMC Directive

This product is tested to meet Council Directive 89/336/EEC Electromagnetic Compatibility (EMC) and the following standards, in whole or in part, documented in a technical construction file:

- EN 50081-2 EMC — Generic Emission Standard, Part 2 — Industrial Environment
- EN 50082-2 EMC — Generic Immunity Standard, Part 2 — Industrial Environment

This product is intended for use in an industrial environment.

Low Voltage Directive

This product is tested to meet Council Directive 73/23/EEC Low Voltage by applying the safety requirements of EN 61131-2 Equipment Requirements and Tests.

For specific information required by EN 61131-2, see the appropriate sections in this publication as well as the following Allen-Bradley publications:

- Industrial Automation Wiring and Grounding Guidelines For Noise Immunity, publication 1770-4.1
- Guidelines For Handling Lithium Batteries, publication AG-5.4
- Automation Systems Catalog, publication B113

This equipment is classified as open equipment and must be installed (mounted) in an enclosure as a means of providing safety protection.

Related Publications

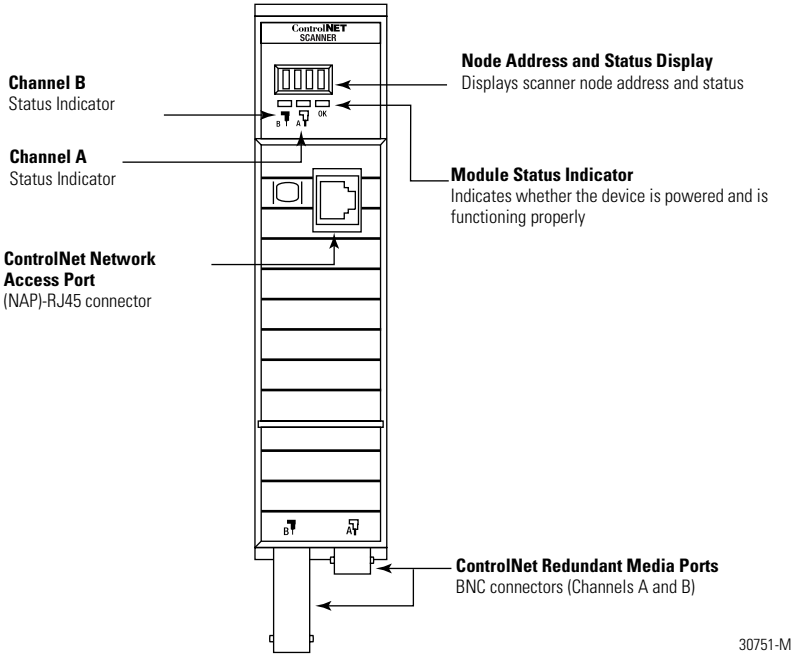
For software configuration information, refer to the ControlNet 1747-SCNR Reference Manual, publication 1747-6.23.

For planning and installation information, refer to the ControlNet Cable System Planning and Installation Manual, publication 1786-6.2.1. If you need a copy of this manual, access the Automation Bookstore website at http://www.theautomationbookstore.com or the Manuals On line website at http://www.ab.com/manuals.

For information on terminating ControlNet coaxial cables, refer to Terminating Your ControlNet Coaxial Cables, CD number CNET-DM001A-EN-C.

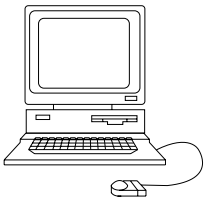
Identify Scanner Module Features

Use this illustration to identify the features of the 1747-SCNR Scanner module.

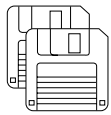


Prepare for Module Installation

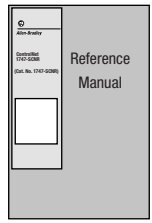
Before you install your module, you need the following items:



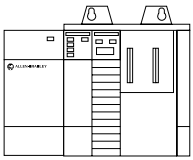
Personal Computer with Microsoft® Windows®



RSNetWorx for ControlNet™, catalog number 9357-CNETL3



1747-SCNR Scanner Module Reference Manual, publication 1747-6.23



SLC™ 1746 chassis with SLC 5/02, 5/03, 5/04, or 5/05 processor and the appropriate configuration software (**RS**Logix 500™)

ControlNet 1784-PCC (shown), or 1784-KTCX15, or 1770-KFC15

41523

Before you install the module, you must know how to:

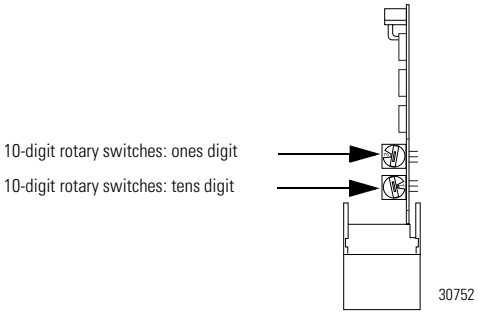
- program and operate an Allen-Bradley SLC 500 programmable controller
- install and configure the devices on your ControlNet network

Make Sure That Your Processor and Scanner Are Compatible

The 1747-SCNR Scanner module fits in any slot of the chassis except for the left-most slot of the first chassis, which is reserved for either the SLC 500 processor or the SLC ControlNet adapter.

Select the ControlNet Node Address

Select the ControlNet node address of the 1747-SCNR by setting the two 10-digit rotary switches on the top of the scanner. Valid switch settings range from 01 through 99. Zero (00) is not a valid node address.



Top View of Module

Important: Since 00 is the default value from manufacturing, you must change the default value when using the scanner for the first time.

Insert the 1747-SCNR Scanner Into the Chassis

To insert the 1747-SCNR Scanner the SLC chassis:

1. Turn off the SLC chassis power supply.

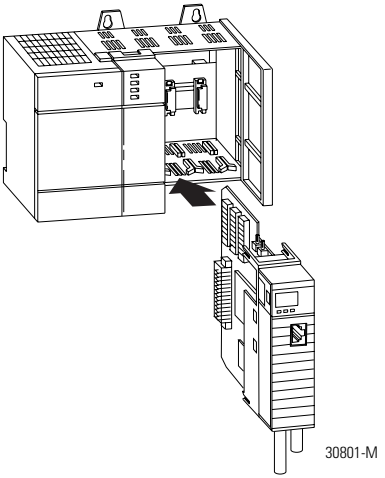
ATTENTION

Do not install the 1747-SCNR Scanner module with the chassis power supply on. Installing the module with the chassis power supply on may damage the module.

Important: If you disconnect the ac power, you lose the chassis ground. Electrostatic damage (ESD) protection is lost.

2. Select a slot for the module in the chassis. Choose any slot except the left-most slot of the first chassis, which is reserved for either the SLC 500 processor.

3. Insert the module into the slot you have selected. We recommend that you insert the 1747-SCNR Scanner as close to the chassis power supply as possible.



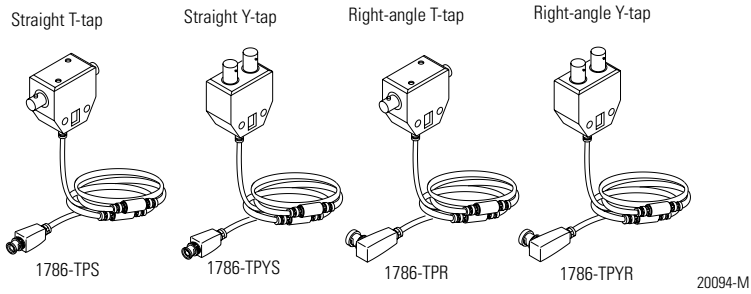
4. Apply firm, even pressure to seat the module in the I/O chassis backplane connectors.

5. Restore power to the SLC chassis.

Connect to a ControlNet Network

Connect the 1747-SCNR Scanner module to a ControlNet network via a tap with a 1 m (39.4 in.) drop cable.

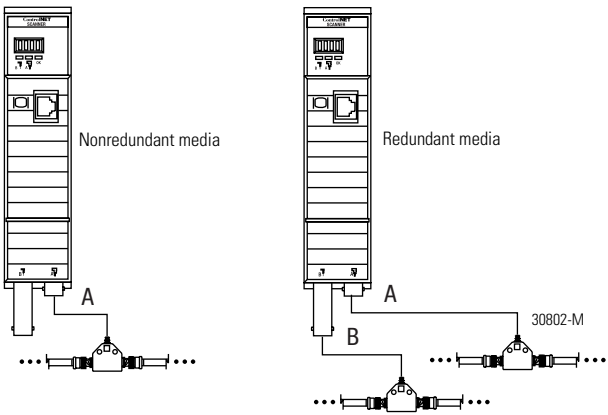
Four Allen-Bradley ControlNet taps are available from Rockwell Automation as shown below.



We recommend that you use a tap with a straight connector—1786-TPS or 1786-TPYS—when you attach a ControlNet 1747-SCNR Scanner to a ControlNet network.

Important: Allen-Bradley ControlNet taps contain passive electronics and must be purchased from Rockwell Automation for the network to function properly.

After terminating your network segments, connect your node to the network.



Remove the tap's dust cap—located on the straight or right-angle connector—and set it aside.

If your network supports	Connect the tap's straight or right-angle connector
nonredundant media	to the **channel A** connector on the scanner—**channel B** is not used.[1]
redundant media	from **trunk-cable A** to **channel A** on the scanner and from **trunk-cable B** to **channel B** on the scanner.

1. Rockwell Automation recommends using channel A for nonredundant media.

For detailed information about planning and installing your ControlNet system, see the following information sources.

Source	Source Number
ControlNet Coax Cable System Planning and Installation Manual	1786-6.2.1
ControlNet Media System Component List	AG-2.2
ControlNet Coax Tap Installation Instructions	1786-5.7
ControlNet Network Access Cable Installation Instructions	1786-2.6
ControlNet Repeater Installation Instructions	1786-2.7
Industrial Automation Wiring and Grounding Guidelines	1770-4.1
Terminating Your ControlNet Coaxial Cables	CNET-DM001A-EN-C

Cables

Several types of RG-6 quad-shield cables may be appropriate for your ControlNet installation—depending on the environment factors associated with your application and installation site.

The following Allen-Bradley ControlNet cable system components are available from Rockwell Automation:

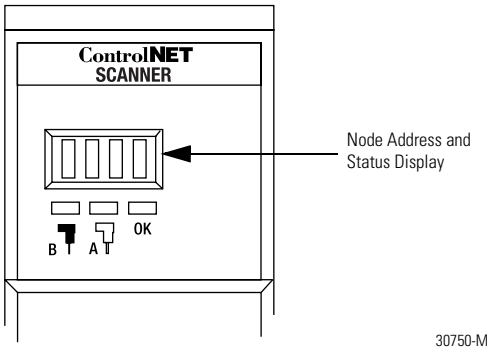
Item[1]		Cat. No.
ControlNet Coax Tool Kit - ControlNet Coax Tool (enables you to make successful coaxial cables)		1786-CTK
Coax Tap Kit	Right-angle T-tap Straight T-tap Right-angle Y-tap Straight Y-tap	1786-TPR 1786-TPS 1786-TPYR 1786-TPYS
Repeaters	Dual channel coaxial repeater	1786-RPCD
Fiber Optic Repeaters	Low-voltage dc coax adapter	1786-RPA
	Short-range fiber module	1786-RPFS
	Medium-range fiber module	1786-RPFM
RG-6 Quad Shield Cable	Standard-PVC CM-CL2	1786-RG6
ControlNet Network Access Cable–3.05 m (10 ft)		1786-CP
BNC Connectors	Barrel (plug to plug)	1786-BNCP
	BNC/RG-6 plug	1786-BNC
	Bullet (jack to jack)	1786-BNCJ
	Isolated-bulkhead (jack to jack)	1786-BNCJI
	Terminators (BNC-75Ω)	1786-XT

1. For a complete list of Allen-Bradley ControlNet cable system components that are available from Rockwell Automation and cable system components available from other suppliers, see the ControlNet Cable System Component List, publication AG-2.2.

Important: Install all wiring for your ControlNet system in accordance with the regulations contained in the National Electronic Code (or applicable country codes), state codes, and applicable municipal codes.

For detailed information about ControlNet cabling, see the ControlNet System Overview, publication 1786-2.9 and the publications listed in the table on the previous page.

Apply Chassis Power



When you apply chassis power, the module address and status display cycles through the following displays:

1. **POST** - The 1747-SCNR runs Power On Self Test.

2. **1111, 2222, etc.** - The 1747-SCNR is executing its startup sequence.

3. **REV#, S/R, QXXX** - The 1747-SCNR firmware version temporarily displays after startup: S=series, R=revision, and XXX=build number.

4. **A#nn** (where nn = ControlNet node address) then **I/O␣** or **I/OX** (based on the number of connections configured and established) then **IDLE** or **RUN** (based on the scanner mode).

Alphanumeric Display

The four character alphanumeric display provides you with additional visual information about the current operational status of the module.

The following tables describes problems that may occur while using your 1747-SCNR, the probable causes, and the recommended action.

OK Indicator and Display Mnemonics

The OK indicator is handled consistently with the ControlNet specifications for the Identity object.

Sequence	OK Indicator	Alpanumeric Display	Module Status Word (M1 file)	Description	Probable Cause	Recommended Action
Startup	Alternately red/ green	POST	N/A	The 1747-SCNR module is running Power On Self Test.	Power was applied to the module.	No action required.
		REV# S/R QXXX	N/A	1747-SCNR Firmware revision: S=series R=Revision XXX=build number. This is a temporary display after startup.	Power was applied to the module.	No action required.
Run time	Green	A#XX	N/A	ControlNet node address.	None.	No action required.
		I/O ■	0x26	All configured connections are established.	None.	No action required.
		IDLE	N/A	The scanner is in idle mode.	The SLC processor or adapter in slot 0 is in program mode or the Scanner Mode Command bit of the Module Command word is clear (O:x.0/10 where x is the scanner slot number).	If you want to put the scanner into run mode, put the SLC processor or adapter in slot 0 into run mode and set the Scanner Mode Command bit of the Module Command word (O:x.0/10).

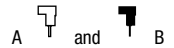
Sequence	OK Indicator	Alpanumeric Display	Module Status Word (M1 file)	Description	Probable Cause	Recommended Action
Run time	Green	RUN	N/A	The scanner is in run mode.	The SLC processor or adapter in slot 0 is in run mode and the Scanner mode Command bit of the Module Command word is set (O:x.0/10).	If you want to put the scanner into program mode, either put the SLC processor or adapter in slot 0 into program mode or clear the Scanner Mode Command bit of the Module Command word (O:x.0/10).
	Flashing Green	I/OX	0x20	The module is not configured.	Module not configured.	Use the SLC 500 SCT 500 to download a new configuration.
			0x21	The current configuration is not valid. The module is not able to start any scheduled communication to the remote device. Only unscheduled communication is possible.	Module not configured.	Use the SLC 500 SCT to download a new configuration.
		I/O ␣	0x22	Connections configured but no connection established.	Connections are disabled.	Check to see if the 1747-SCNR and the target devices are correctly connected to the ControlNet network.

Sequence	OK Indicator	Alpanumeric Display	Module Status Word (M1 file)	Description	Probable Cause	Recommended Action
Run time	Flashing Green	I/O ▙	0x23	Connections Configured but only 25% are successfully established.	Remote devices are not on line.	Check to see if the remote devices are correctly connected to the ControlNet network.
		I/O ▛	0x24	50%		
		I/O ▜	0x25	75%		
Errors	Off	None	N/A	Module not communicating .	Power supply fault.	Check power supply, cable connectors, and seat module firmly in chassis.
	Flashing Green	N/A	0x43	Network error.	Cable error or no other nodes on the network.	Verify network cabling.
	Red	None	N/A	Module Auto reset.	Module power supply problem.	Move module in a slot close to the power supply.
		ERR0	N/A	Module faulted.	Pre-boot code failed during power-up.	Contact Rockwell Automation representative or distributor.
		ERR1 through ERR9	N/A	Power On Self Test failure.	RAM or Flash test failed. Processor fault or watchdog timeout.	Reset the module. If fault persists, contact Rockwell Automation representative or distributor.
		FALT NNNN	0x40	Module faulted.	Internal error detected.	Contact Rockwell Automation representative or distributor.
	Flashing Red	A#00 FLSH CFG ERAS	0x42	Module erased network and connection configuration stored in flash.	Network node address set to 00.	Power down the module and change the address switches.

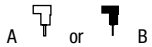
Sequence	OK Indicator	Alpanumeric Display	Module Status Word (M1 file)	Description	Probable Cause	Recommended Action
Errors	Flashing Red	DUPL A#XX	0x44	Duplicate node.	Another device with the same ControlNet address is on the link.	Power down the 1747-SCNR module and change the network address switches to a correct node.
		BOOT	0x45	Running boot code.	The 1747-SCNR firmware is corrupted.	Reset the module. If fault persists, contact Rockwell Automation representative or distributor.

Status Indicators

The ControlNet status indicators inform you of the operational state of the ControlNet network.

Indicator	Color[1]	Probable Cause	Recommended Action
	Off	No power	No action required or apply power.
	Steady Red	Faulty unit	Cycle power or reset unit. If fault persists, contact your Rockwell Automation representative or distributor.
	Alternating Red/Green	Self-test	No action required.
	Alternating Red/Off	Incorrect node configuration or duplicate ControlNet node address	Check network address and other ControlNet configuration parameters.

1. Definition of terms:
   steady - indicator is on continuously in the defined state.
   alternating - the two indicators alternate between the two defined states at the same time (applies to both indicators *viewed together*); the two indicators are always in opposite states, out of phase.
   flashing - the indicator alternates between the two defined states (applies to each indicator *viewed independent* of the other); if both indicators are flashing, they flash together, in phase.

Indicator	Color[1]	Probable Cause	Recommended Action
	Off	Channel disabled	Program network for redundant media, if required.
	Steady Green	Normal operation	No action required.
	Flashing Green/Off	Temporary network errors	• Check media for broken cables, loose connectors, missing terminators, etc. • If condition persists, refer to ContolNet Cable Planning and Installation Manual, publication 1786-6.2.1.
	Flashing Red/Off	Media fault	• Check media for broken cables, loose connectors, missing terminators, etc. • If condition persists, refer to ContolNet Cable Planning and Installation Manual, publication 1786-6.2.1.
		No other nodes present on network	Add other nodes to the network.
	Flashing Red/Green	Incorrect node address	Change 1747-SCNR node address so that it is less than or equal to SMAX[2].
		Incorrect network configuration	Reconfigure ControlNet network so that SMAX[2] is greater than or equal to 1747-SCNR node address.

1. Definition of terms:
   steady - indicator is on continuously in the defined state.
   alternating - the two indicators alternate between the two defined states at the same time (applies to both indicators *viewed together*); the two indicators are always in opposite states, out of phase.
   flashing - the indicator alternates between the two defined states (applies to each indicator *viewed independent* of the other); if both indicators are flashing, they flash together, in phase.
2. SMAX is the highest node address on a ControlNet network that can transmit scheduled data.

Specifications

Module Location	Slot 1 or above
Module Defaults	Node Address -00
Maximum Backplane Current	900 mA @ 5V dc
Isolated Voltage	Optical Isolation between backplane and ControlNet channel 1 Megohm resistor from ControlNet channel to chassis
Environmental Conditions: Operational Temperature Storage Temperature Relative Humidity	 0-60°C (32-140°F) -40 to 85°C (-40 to 185°F) 5-95% without condensation
Shock unpackaged	30g operational 50g non-operational
Vibration Unpackaged	5g from 10-150Hz
Immunity Radiated Fields	10 V/m 27 mHz-1000 mHz
Agency Certification (when product or packaging is marked)	Class 1 Division 2, groups A, B, C, D2 marked for all applicable directives ControlNet CONFORMANCE TESTED
Reference Manual	1747-6.23

CSA Hazardous Location Approval

CSA certifies products for general use as well as for use in hazardous locations. **Actual CSA certification is indicated by the product label** as shown below, and not by statements in any user documentation.

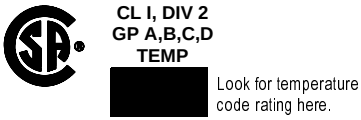
Example of the CSA certification product label:

To comply with CSA certification for use in hazardous locations, the following information becomes a part of the product literature for this CSA-certified industrial control product.

- This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D, or non-hazardous locations only.
- The products having the appropriate CSA markings (that is, Class I, Division 2, Groups A, B, C, D) are certified for use in other equipment where the suitability of combination (that is, application or use) is determined by the CSA or the local inspection office having jurisdiction.

Important: Due to the modular nature of a programmable control system, the product with the highest temperature rating determines the overall temperature code rating of a programmable control system in a Class I, Division 2, location. The temperature code rating is marked on the product label as shown.

Temperature code rating:



The following warnings apply to products having CSA certification for use in hazardous locations.

ATTENTION: Explosion hazard -

- Substitution of components may impair suitability for Class I, Division 2.
- Do not replace components unless power has been switched off or the area is known to be non-hazardous.
- Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.
- Do not disconnect connectors unless power has been switched off or the area is known to be non-hazardous. Secure any user-supplied connectors that mate to external circuits on this equipment by using screws, sliding latches, threaded connectors, or other means such that any connection can withstand a 15 Newton (3.4 lb.) separating force applied for a minimum of one minute.

Approbation d'utilisation dans des emplacements dangereux par la CSA

La CSA certifie les produits d'utilisation générale aussi bien que ceux qui s'utilisent dans des emplacements dangereux. **La certification CSA en vigueur est indiquée par l'étiquette du produit** et non par des affirmations dans la documentation à l'usage des utilisateurs.

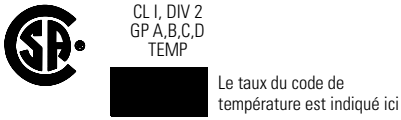
Exemple d'étiquette de certification d'un produit par la CSA:

Pour satisfaire à la certification de la CSA dans des endroits dangereux, les informations suivantes font partie intégrante de la documentation ce produit industriel de contrôle certifiés par la CSA.

- Cet équipement convient à l'utilisation dans des emplacements de Classe 1, Division 2, Groupes A, B, C, D, ou ne convient qu'à l'utilisation dans des endroits non dangereux.
- Les produits portant le marquage approprié de la CSA (c'est à dire, Classe 1, Division 2, Groupes A, B, C, D) sont certifiés à l'utilisation pour d'autres équipements où la convenance de combinaison (application ou utilisation) est déterminée par la CSA ou le bureau local d'inspection qualifié.

Important: Par suite de la nature modulaire du système de contrôle programmable, le produit ayant le taux le plus élevé de température détermine le taux d'ensemble du code de température du système de contrôle d'un programmable dans un emplacement de Classe 1, Division 2. Le taux du code de température est indiqué sur l'étiquette du produit.

Taux du code de température:



Les avertissements suivants s'appliquent aux produits ayant la certification CSA pour leur utilisation dans des emplacements dangereux.

AVERTISSEMENT: Risque d'explosion -

- La substitution de composants peut rendre ce matériel inacceptable pour lesemplacements de Classe I, Division 2.
- Couper le courant ou s'assurer quel'emplacement est désigné non dangereux avant de remplacer lescomposants.
- Avant de débrancher l'équipement, couper le courant ou s'assurer que l'emplacement est désigné non dangereux.
- Avant de débrancher les connecteurs, couper le courant ou s'assurer que l'emplacement est reconnu non dangereux. Attacher tous connecteurs fournis par l'utilisateur et reliés aux circuits externes d'un appareil Allen-Bradley à l 'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens permettant aux connexions de résister à une force de séparation de 15 newtons (3,4 lb. - 1,5 kg) appliquée pendant au moins une minute.

Le sigle CSA est la marque déposée de l'Association des Standards pour le Canada.

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