LIPS
Sense The World

LIPSedge™ F110
3DxAI Edge Accelerator Card

Datasheet

August 2024

Revision 1.0

Although every effort has been made to ensure the accuracy of this manual, errors and inconsistencies may remain. The manufacturer assumes no liability resulting from errors or omission in this manual, even if damage arises from the use of the information. All contents are subject to constant revision to improve its reliability and may be changed without prior notice.

August 2024

Contents

Revision History

Ver.	Release Date	Description	Author
1.0	2024/08/26	1. Internal draft version	Mark

1. Overview

1.1. Features

- Powered by the NVIDIA AGX Xavier processor
- Additional driver to support PCIe Endpoint mode
- Support Gigabit Ethernet
- Support PoE (Power over Ethernet), IEEE802.3af/at
- Dual operating system running at the same time
- Abundant IO ports

1.2. Applications

- Low Latency 3D Robotics Vision Solution
- Robotics Safety Solution for Collaboration

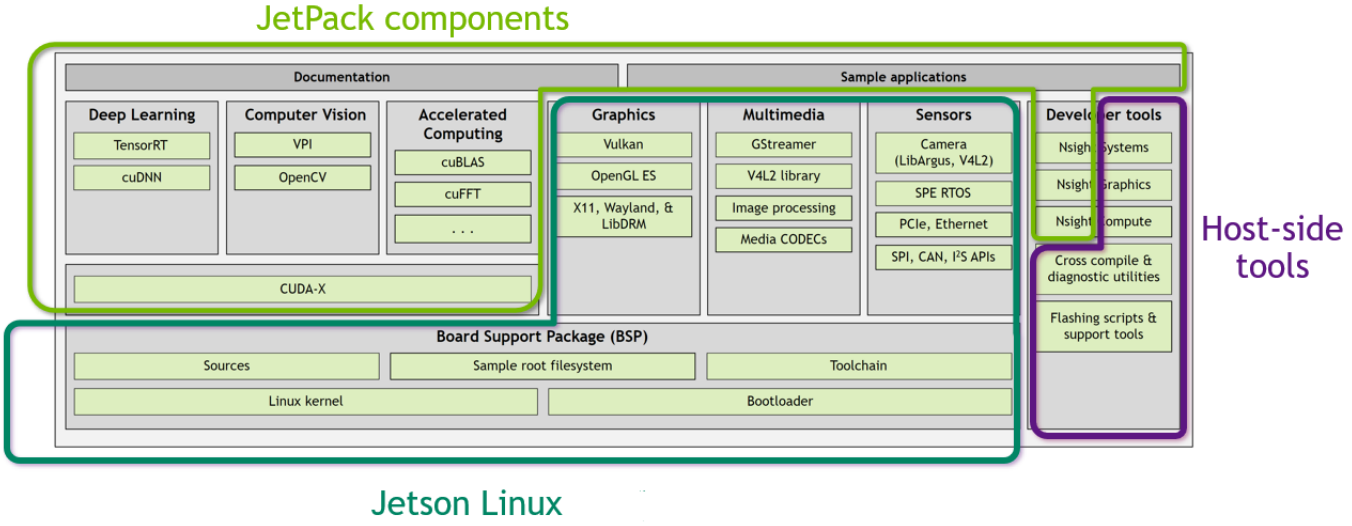
2. Specifications

2.1. Technical Information

Module Support		
Module		NVIDIA Xavier AGX 32GB
Internal I/O Physical		
HDMI		1x HDMI type A
LAN		1x 1000Base-T RJ-45 2x 2.5Gbase-T RJ-45 support POE 802.3af/at
USB		1 x USB 3.2 Gen1 type-C 1x USB type-C OTG only 1x USB 3.0 type A port
Pin header		40-pin pin header (5x GPIO, 1x I2C, 1x Debug UART)
Expansion slot		1x M.2 M-key 2242 PCIe only
Power connector		2 x 6-pin backward connector
Fan connector		1x 4-pin fan connector
Optional function		
Boot sequence control		Build-in MCU to control boot sequence
TPM		TPM 2.0
Storage		
Storage		Micro SD(up to 2 TB)
Power Input		
Power Input		12V DC input
Board Dimension		
Dimension (mm)		260 x 111 x 40
Software		
Supported OS		Linux Ubuntu 18.04 LTS / 20.04 LTS
Environmental		
Humidity		10 ~ 90% @ 40°C, (non-condensing)
Temperature	Operating Temperature	-20 °C ~ +50°C
	Storage Temperature	-45°C ~ 80°C

3. System Architecture

The diagram below illustrates the NVIDIA® Jetson™ Linux architecture.

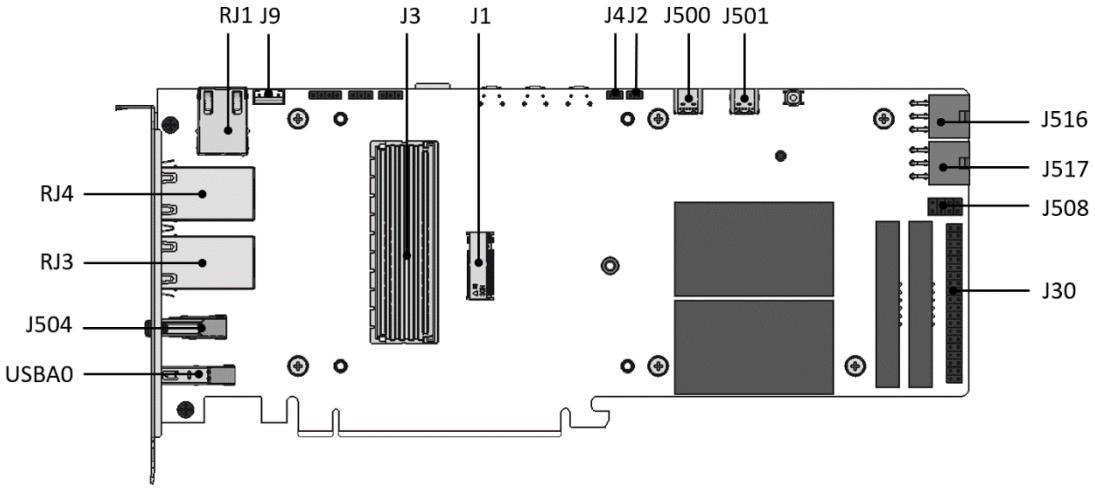


For detailed information, refer to the Developer Guide at the following link:https://docs.nvidia.com/jetson/archives/r35.4.1/DeveloperGuide/text/AR/JetsonSoftwareArchitecture.html

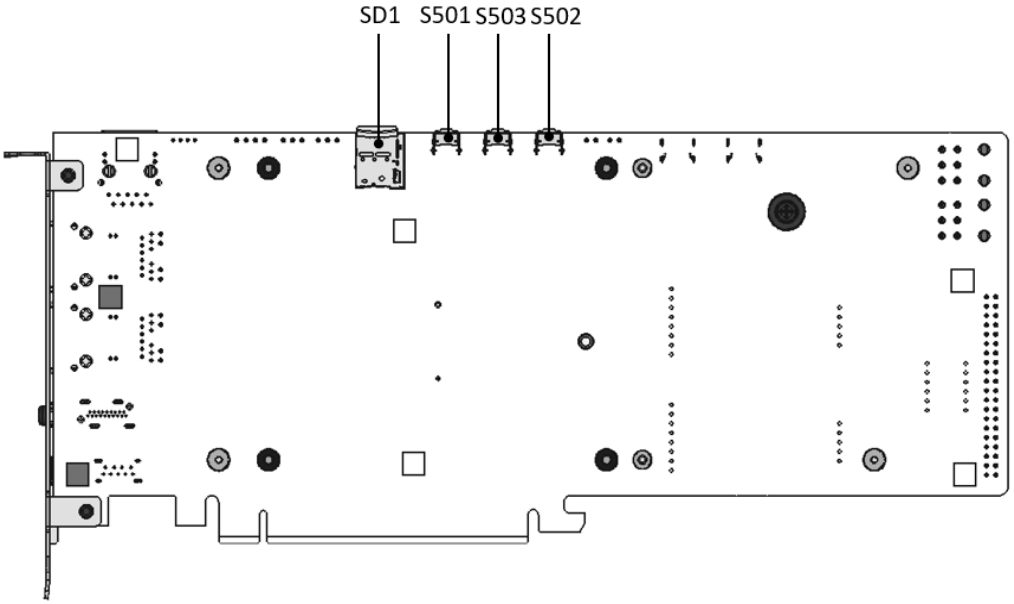
4. Hardware Details

4.1. General Characteristics

4.1.1 Front (The component side)



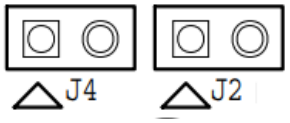
4.1.2 Rear (The soldering side)



No.	Name	Function
1.	J3	Jetson AGX Xavier module connector
2.	J504	HDMI 2.0b Type-A connector
3.	J1	M.2 M-key 2242 connector, support PCIe/mSATA function device
4.	USBA0	USB3.2 Gen1 Type-A
5.	J500	USB Type-C OTG port
6.	J501	USB3.2 Gen1 Type-C
7.	RJ1	RJ45 connector, support 10/100/1000M Ethernet
8.	RJ3,RJ4	RJ45 connector, support 2.5G Ethernet with 802.3af/at POE
9.	J2,J4	Power/Reset pin
10.	J30	40-pin header for GPIO/UART/I2C/I2S/SPI
11.	J508	Debug UART
12.	J516	6 pins System Power input connector
13.	J517	6 pins PoE Power input connector
14.	S502	Reset Button
15.	S503	Recovery Button
16.	S501	Power ON Button
17.	SD1	SD Card slot
18.	J9	5V Fan connector
19.	DS2	Power Status LED

4.1.3 Pin-outs

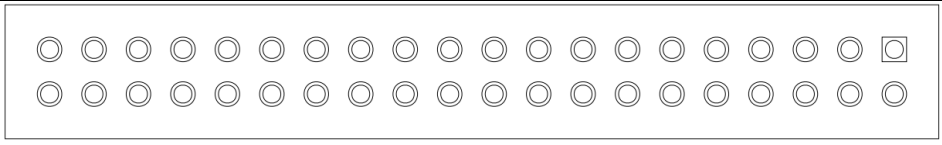
- Pin header for Power and Reset

Table			
Location	J2,J4		
Type	Pin header		
Pin No.	Description.		Pin No
1	X86_PWR	GND	2

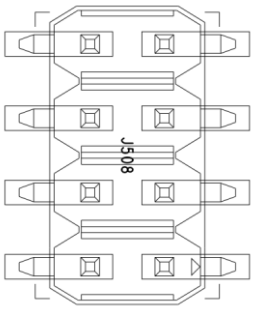
- Pin header for SPIO/SPI/I2C/I2S

Table			
Location	CN6		
Type	Pin header		
Pin No.	Description		Pin No.
1	VDD_3V3	VDD_5V	2
3	I2C_GP5_DAT_3V3	VDD_5V	4
5	I2C_GP5_CLK_3V3	GND	6
7	MCLK01_3V3	UART2_TXD_HDR_3V3	8
9	GND	UART2_RXD_HDR_3V3	10
11	UART2_RTS_HDR_3V3	I2S1_SCLK_3V3	12
13	GPIO_3_3V3	GND	14
15	GPIO_4_3V3	GPIO8_AO_DMIC-IN	16
17	VDD_3V3	PWM3_GPIO_5_3V3	18
19	SPI1_MOSI_3V3	GND	20
21	SPI1_MISO_3V3	40HEADER_GPIO_1_3V3	22

23	SPI1_SCK_3V3	SPI1_CS0_3V3	24
25	GND	SPI1_CS1_3V3	26
27	I2C_GP5_DAT_3V3	I2C_GP5_CLK_3V3	28
29	CAN0_DIN	GND	30
31	CAN0_DOUT	GPIO9_CAN1_EN	32
33	CAN1_DOUT	GND	34
35	I2S1_FS_3V3	UART2_CTS_HDR_3V3	36
37	CAN1_DIN	I2S1_DIN_3V3	38
39	GND	I2S1_DOUT_3V3	40

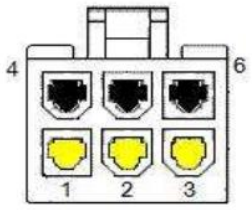


- Debug UART Connector

Table		
Location	J508	
Type	Wafer connector	
Pin No.	Description	
1	3.3V	
2	GND	
3	UART3_TX_DEBUG_3V3	
4	UART2_TX_3V3	
5	UART3_RX_DEBUG_3V3	
6	UART2_RX_3V3	
7	UART2_RTS_3V3	
8	UART2_CTS_3V3	

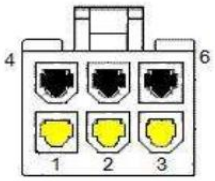
- PoE Power input connector

Table			
Location	J517		
Type	6-pin male connector		
Pin No.	Description	Pin No.	Pin No.
1	VCC_12V	GND	4
2	VCC_12V	GND	5
3	VCC_12V	GND	6



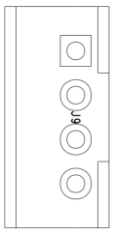
- System Power input connector

Table			
Location	J516		
Type	6-pin male connector		
Pin No.	Description	Description	Pin No.
1	VCC_12V	GND	4
2	VCC_12V	GND	5
3	VCC_12V	GND	6



- 12V Fan Connector

Table	
Location	J9
Type	Wafer connector
Pin No.	Description
1	GND
2	VDD_12V
3	FAN_PWM_Q
4	FAN_TACH



4.2. Power Consumption

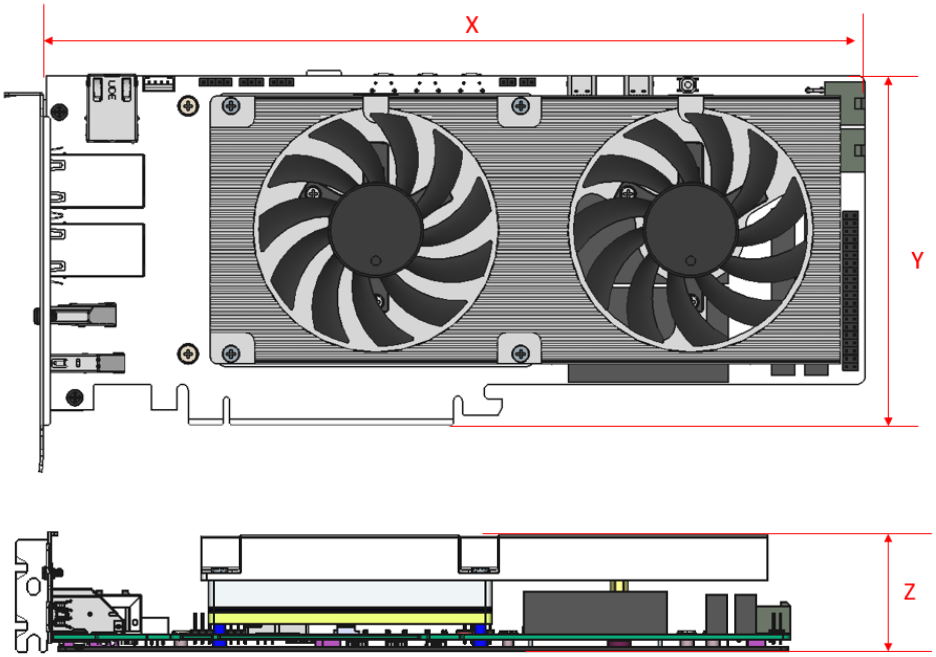
Items	Values
AGX Xavier	10W / 15W / 30W
PoE	15W / 30W (per port)

4.3. Storage Temperature and Ambient Temperature

Items	MIN	NOM	MAX	UNIT
Storage Temperature	-45	-	+80	°C
Ambient Operation Temperature	-20	-	+50	°C

4.4. Form Factor

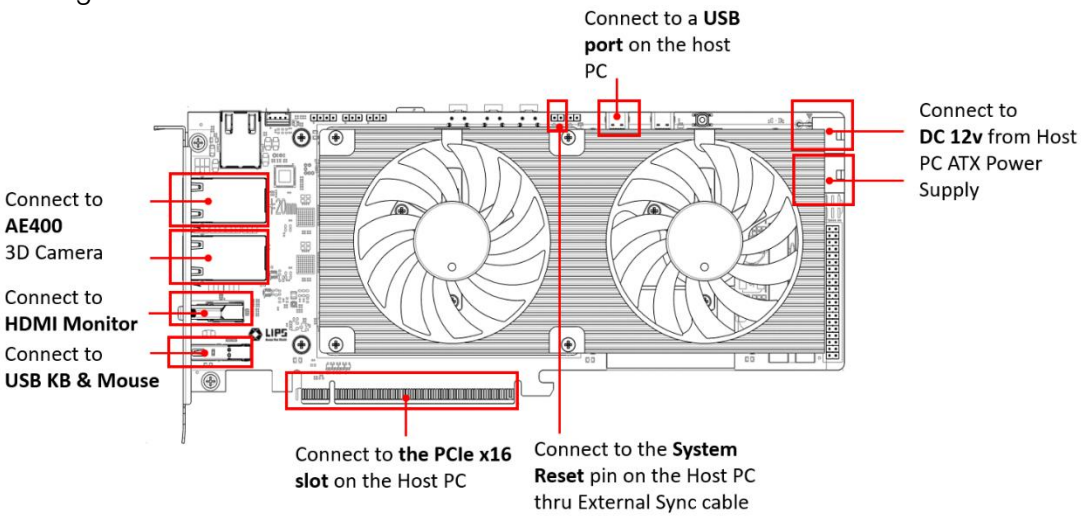
LIPSedge™ F110



Dimension	MIN	NOM	MAX	TOLERANCE	UNIT
X	259.5	260	260.5	±0.5	mm
Y	110.5	111	111.5	±0.5	mm
Z	39.5	40	40.5	±0.5	mm

4.5. Host Connectivity

Prior to installing or removing LIPSedge™ F110 or cables, unplug the power supply completely to eliminate the risk of static electricity damage, which can easily harm sensitive computer components. Before handling any boards, ensure proper grounding by touching the metal chassis of the computer to create a safe working environment.



4.6. Installation

For the installation instruction, refer to *LIPSedge™ F110 User's Manual*.

4.7. Thermal Solution

Items	MIN	NOM	MAX	UNIT
Storage Temperature	-45	-	+80	°C
Ambient Operation Temperature	-20	-	+50	°C

5. Optical System

This section is not applicable to this model.

5.1. Illuminators or KEY PARTS

This section is not applicable to this model.

5.2. Image and Field-of-View to Orientation

This section is not applicable to this model.

6. Product Performance

This section is not applicable to this model.

7. Reliability Analysis

Refer to the reliability test report for this model.

No.	Test
1.	Storage Temp/Hum Test
2.	Operation Temp/Hum Cycle Test
3.	Power On/Off Test
4.	Thermal Shock Test
5.	Mechanic Shock Test (MIL-STD 810G, Method 516.6, Procedure I.)
6.	Random Vibration Test (IEC60068-2-64)
7.	Sine Vibration (IEC 60068-2-6)
8.	MTBF (Telcordia (SR-332) Issue 4, Method III, Case 1, Ground, Mobile)
9.	Package Vibration Test (ISTA 2A)
10.	Kit Box Drop test (ISTA 2A)

8. LIPSedge™ SDK

This section is not applicable to this model.

8.1. SDK, Middleware and Sample Codes

This section is not applicable to this model.

8.2. Application Domains

This section is not applicable to this model.

9. Regulatory Compliance

9.1. CE

CERTIFICATE OF CONFORMITY

According to

EMC Directive of 2014/30/EU

Product: 3D Camera LIPSedge AE400

Type Designation: LS2901

Applicant: LIPS Corporation

Applicant Address: 2F, No. 100, Ruiguang Rd, Neihu Dist, Taipei 114, Taiwan

The following standards were applied:

EN 55032: 2015 + AC: 2016, Class B
CISPR 32: 2015
EN 61000-3-2: 2014
EN 61000-3-3: 2013
EN 55024: 2010 + A1: 2015
IEC 61000-4-2: 2008
IEC 61000-4-3 + A2: 2010
IEC 61000-4-4:
IEC 61000-4-8: 2009
IEC 61000-4-11: 2004 + A1: 2017

Sample

Detailed specifications of the tested and certified product are shown in the following Test Report:

Test Report No: WD-EE-R-190595-A0 Issued Date: Sep. 06, 2019

The Certificate of Conformity (COC) is issued on a voluntary basis according to the Directive 2014/30/EU relating to Electromagnetic Compatibility. It confirms that the listed apparatus complies with all essential requirements of the directive and is based on the technical specifications applicable at the time of issuance. It refers only to the particular sample submitted for testing and certification.

CE

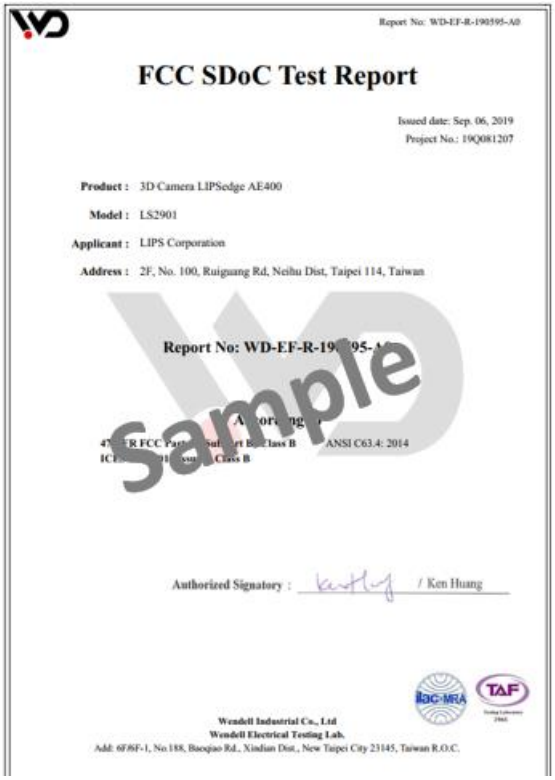
Ken Huang / Authorized Signatory

Wendell Electrical Testing Lab.

6F, No. 188, Baoqiao Road, Xindian District 231, New Taipei, Taiwan

TEL: +886-2-2917-5770 FAX: +886-2-2914-6763

9.2. FCC



Report No: WD-EF-R-190595-A0

FCC SDoC Test Report

Issued date: Sep. 06, 2019
Project No.: 19Q081207

Product : 3D Camera LIPSedge AE400
Model : LS2901
Applicant : LIPS Corporation
Address : 2F, No. 100, Ruiguang Rd, Neihu Dist, Taipei 114, Taiwan

Report No: WD-EF-R-19[illegible]95-A[illegible]

Sample

[illegible] ANSI C63.4: 2014

Authorized Signatory : / Ken Huang

Wendell Industrial Co., Ltd
Wendell Electrical Testing Lab.
Add: 6F/8F-1, No.188, Baoqiao Rd., Xindian Dist., New Taipei City 23145, Taiwan R.O.C.

9.3. ROHS

LIPS Sense The World

Declaration of Compliance

EU RoHS 2.0 Directive 2011/65/EU & (EU)2015/863

We hereby confirm and assure that our Product/Project Name(s)/Version(s)/Release(s) are in conformity of Directive 2011/65/EC & (EU)2015/863.

Substances	Maximum concentration values
Lead (Pb)	0.1wt% (1,000ppm)
Mercury (Hg)	0.1wt% (1,000ppm)
Cadmium (Cd)	0.01wt% (100ppm)
Hexavalent chromium (Cr6+)	0.1wt% (1,000ppm)
Polybrominated biphenyls (PBB)	0.1wt% (1,000ppm)
Polybrominated diphenyl ethers (PBDE)	0.1wt% (1,000ppm)
Bis(2-ethylhexyl) phthalate (DEHP)	0.1wt% (1,000ppm)
Butyl benzyl phthalate (BBP)	0.1wt% (1,000ppm)
Dibutyl phthalate (DBP)	0.1wt% (1,000ppm)
Diisobutyl phthalate (DIBP)	0.1wt% (1,000ppm)

About exempted substances of RoHS Directive, according to exempted terms to perform.

9.4. REACH

Declaration of Compliance

REACH SVHC

We hereby confirm and assure that our Products/Project Name(s)/Version(s)/Release(s) are in conformity with the latest (EC) No 1907/2006 REACH requirement and/or any amendment directives.

Our Products are in compliance with the latest Substances Of Very High Concern (SVHC) and Dangerous Substances (reach appendix 17) of (EC) No 1907/2006 REACH requirement and/or any amendment directives.

The current SVHC Candidate List can be found here :
https://echa.europa.eu/candidate-list-table

9.5. Others

This section is not applicable to this model.

LIPS CORPORATION

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