Technical Information

V850-related Target Interface

Mar. 14, 2012
First Edition

Go through the required procedures as stated under Foreign Exchange and Foreign Trade Control Law in exporting (including the case where travellers directly carry) this product or providing this product for residents outside Japan.

Document change history

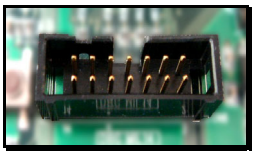
First Edition	Mar. 14, 2012	Initial edition

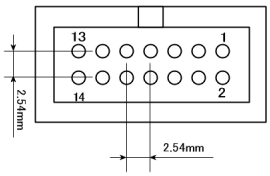
Supported connector

* : The state of support provision differs from group to group. See “Applicable connector(s)” columns in the pages for respective groups.

(For detailed dimensions of the connectors, refer to the documentations by respective manufacturers of the connectors.)

14-pin MILconnector





(Top view on the target board)

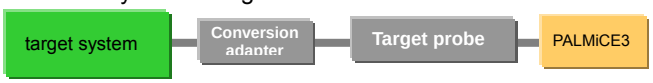
Recommended connector
Manufacturer : Omron Corporation
Model : XG4C-1431

Target probe specifications

Connector to be mounted on the target board		Required target probe and conversion adapter		
14-pin MIL connector	→	Conversion adapter	+	H-UDI cable

Target probe specifications

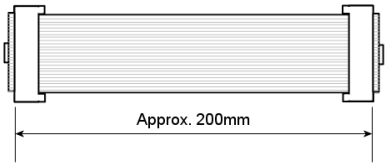
To be used by connecting it to PALMiCE3 main unit.



H-UDI cable

Product : P3-CB-MIL14-MIL14

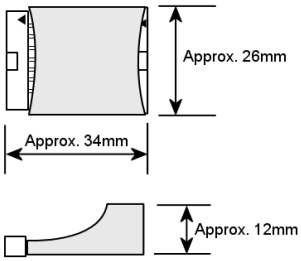
Probe for connecting PALMiCE3 HUDI141 main unit to 14-pin MIL connector on the target system.



Conversion adapter specifically for PALMiCE3 V850

Product : P3-ADP-V850-MIL14-MIL14

Conversion adapter for connecting PALMiCE3 HUDI141 main unit to 14-pin MIL connector on the target system.
It is to be used by attaching to H-UDI cable.



V850E2M

V850E2/MN4
V850E2/ML4

V850E2/MN4

Applicable product and applicable connector

Applicable product	PALMiCE3-V850 (HUDI141 model)
Applicable connector (Connector for debugger)	MIL connector (14-pin design)

CPU group and Part No.

CPU group	CPU Part No.
V850E2/MN4	μPD70F3510 μPD70F3512

Target interface

MIL connector

For the specifications of MIL connector, see "Supported connector" listed in this manual.

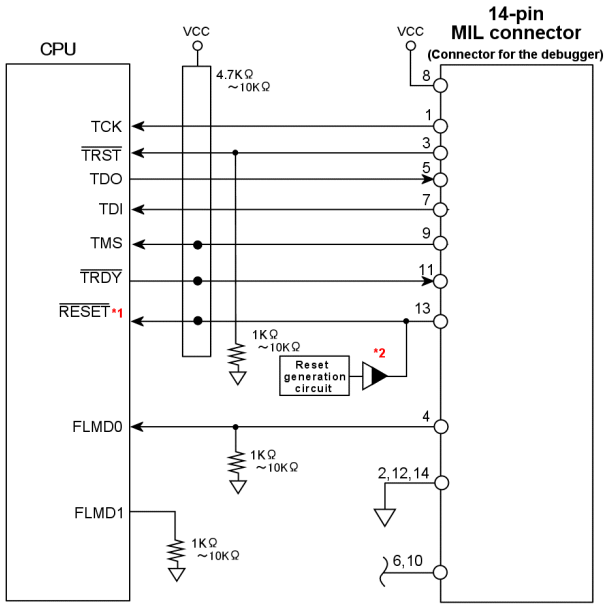
Signals

Pin No.	Signal	Input/Output*1	Pin No.	Signal	Input/Output*1
1	TCK	Input	2	GND	
3	$\overline{\text{TRST}}$	Input	4	FLMD0	Input
5	TDO	Output	6	N.C.	
7	TDI	Input	8	VCC*2	
9	TMS	Input	10	N.C.	
11	$\overline{\text{TRDY}}$	Output	12	GND	
13	$\overline{\text{RESET}}$	Input	14	GND	

- For the pin where stated as N.C. in the table, leave the signal unconnected.

*1: Input/output is based on the target system.
*2: Connect it to the same power source as that of DVDD.

Target connection reference diagram



*1: The debugger outputs reset signal.
*2: Prepare a RESET generator circuit of open-collector output.

Document change history (V850E2/MN4)

First Edition	Mar. 14, 2012	Initial edition

V850E2/ML4

Applicable product and applicable connector

Applicable product	PALMiCE3-V850 (HUDI141 model)
Applicable connector (Connector for debugger)	MIL connector (14-pin design)

CPU group and Part No.

CPU group	CPU Part No.
V850E2/ML4	μPD70F4021 μPD70F4022

For details of connector interface, please contact us.

Document change history (V850E2/ML4)

First Edition	Mar. 14, 2012	Initial edition

PALMiCE3 HUDI141 model

Hardware Manual

(Fourth Edition)

Precautions For Use

Read the following thoroughly before attempting to use the product.

- In the event of exporting the product (including taking it outside of Japan) or supplying the software to third parties not resident in Japan, make sure that all procedures as stipulated by the Foreign Exchange and Foreign Trade Act are strictly observed.
- The product, the product manual and the software may not be used or reproduced in whole or in part without prior permission.
- Product details and specifications are subject to modification without prior notice for the purpose of improving reliability, functionality and design.
- Note that although a great deal of care has been taken in manufacturing the product, the company does not guarantee the results of its use.
- The product has been manufactured with no intention of it being used for any purpose that requires extremely high levels of reliability and safety in functions and performance (such as in military equipment, nuclear power equipment, aerodynamic or space exploration equipment, traffic equipment, incinerator control equipment, medical equipment, power generation control equipment, equipment installed on the seabed, safety devices or similar equipment) in which malfunctions or incorrect operations may result in direct threats or damage to human lives or that may result in serious threats to society in general. Note that the company refutes all responsibility for damages incurred through these uses.
- Do not install the product in locations subject to excessive amounts of water, humidity, dust, oily vapor, etc., as it may result in the outbreak of fire, malfunctions or electric shock. Make sure that the correct power supply and voltage as listed is used.
- SuperH™ is a registered trademark or trademark of Renesas Electronics Corporation in Japan, the USA, and other countries.
-
- CSIDE, PALMiCE, and COMPUTEX are registered trademarks of Computex Co., Ltd. in Japan.
- All other company names, product names, etc., listed within the product manual are trademarks and registered trademarks of each individual manufacturer

Table of Contents

Chapter 1 Getting Started

1.1 Introduction

PALMiCE3 HUDI141 model is an on-chip debugger that supports Renesas Electronics-made microcomputers.

Its main features are as follows:

- No power supply to PALMiCE3 is required (with VBus support)
- Allows downloading to external flash memory and its debugging
- Supports on-chip flash memory
- Versatile
- Supports USB Standard Revision2.0 high-speed and full-speed
- Allows downloading of the latest CSIDE from the Internet
- Designed with palm-sized, light, and compact body

Info.

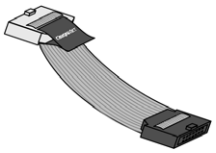
This product supports various series of Renesas Electronics-made CPUs.
Therefore, names of other CPUs besides that of the one you are using are also mentioned in this manual.
Besides this manual, make sure to consult the User's Manual (in PDF format) attached to the product you use.

1.2 Product Composition Contents

Product composition of PALMiCE3 HUDI141 is as follows.

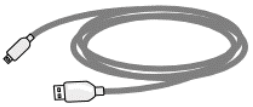
・PALMiCE3 HUDI141 model ····· x 1

・H-UDI cable (Specifically for PALMiCE3) ····· x 1



・Read before use (Introductory guide) ····· x 1

・USB cable ····· x 1



・Product name sticker ····· x 1

・Software (CD-ROM) *1 ····· x 1

***1 : Its name varies depending on CSIDE, the debugger software you purchased.**

■If you purchased PALMiCE3 SH

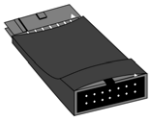
Besides the above illustrated product composition contents, it is accompanied by the following conversion probe. It is to be used by connecting to the main unit of PALMiCE3 HUDI141 model.

・RSTOUT_GND probe (For HUDI141/Approx. 35cm) ····· x 1

■If you purchased PALMiCE3 V850

Besides the above illustrated product composition contents, it is accompanied by the following conversion adapter. It is to be used by connecting to H-UDI cable.

・ADP-P3-V850-MIL14-MIL14 (Specifically for PALMiCE3 V850) ····· x 1



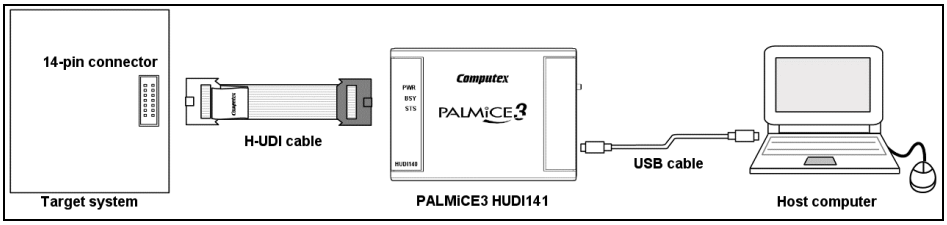
1.3 Connection structure

PALMiCE3 is to be connected to the host computer with the USB cable included with the product. PALMiCE3 is to be connected to the target system with the H-UDI cable included with the product. Also, RSTOUT probe is to be connected as required. For details on RSTOUT probe and the target interface, see the next chapter.

Note

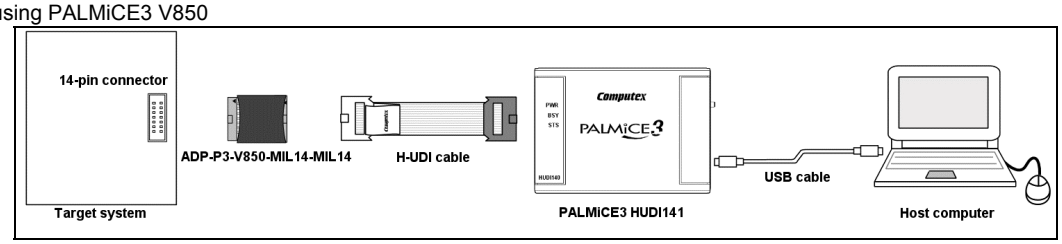
To use PALMiCE3, the interface connector for PALMiCE3 use needs to be mounted on the target system beforehand.

■When using PALMiCE3 H8
■When using PALMiCE3 SH



Connection structure

■When using PALMiCE3 V850



Connection structure

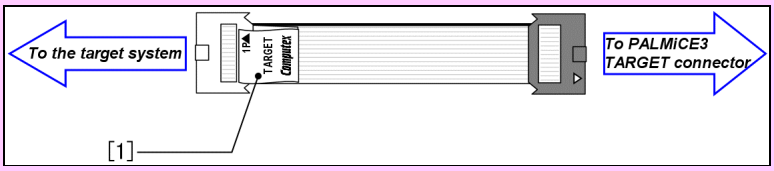
Note

When connecting the hardware,
if you put too much pressure, stress, or strain on the connector, doing so may cause damage.
Be careful not to put too much pressure or try not to strain or put stress on the connector.

Note

About H-UDI cable specifically for PALMiCE3

- Make sure to use PALMiCE3-specific H-UDI cable made by Computex.
- When establishing connections, connect the connector with a tag ([1] in the illustration) to the target system.



Info.

For connection to the target system, optional products such as conversion adapter are available.

Chapter 2
PALMiCE3 HUDI141 Hardware Specifications

2.1 PALMiCE3 HUDI141 model hardware specifications

PALMiCE3 is a purpose-built debugger for utilizing on-chip debugging feature incorporated in Renesas Electronics-made CPU.

PALMiCE3 incorporates on-chip debugging feature to provide the following functionalities.

- Execution and break of the user program
- Break by matching any address and data
- Force break of the user program
- Trace and step executions
- Viewing and editing of memory, register, and I/O

This chapter spells out specifications of PALMiCE3 hardware.

2.2 HUDI141 model specifications

Item		HUDI141 model specifications
Supported CPUs		SH-Mobile SuperH RISC engine family *1 H8SX family H8S family R8J family V850
Interface *2	Specification of the connector	14-pin MIL connector (Cable length: Approx. 20cm)
	Specification of the connector on the target system side	OMRON-made XG4C-1431 (14-pin)
Target interface voltage		1.65V - 5.5V (Follows target)
LED		・PWR ・BSY ・STS
Outside dimensions		95mm(W)×70mm(D)×21mm(H) (Exclusive of connector)
Operating environment		Operating temperature：5℃ to 40℃ Operating humidity：35% to 85%RH No condensation
USB host interface		USB(Ver2.0)
AC adapter		Not required (Vbus support)
Current consumption		DC5V ±5% Max. approx. 250mA (from USB VBus)
Weight		78g

*1: With the exception of SH7050 series
*2: Support also available for 36-pin MDR connector and 38-pin Mictor connector with optional dedicated adapters.

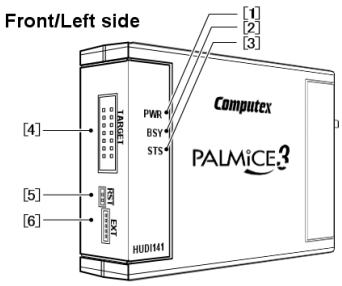
Note

MIL connector : 14-pin connector that supports H-UDI interface

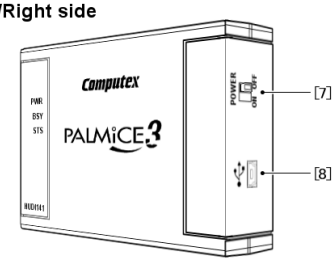
2.3 Name and function of each part

Appearance drawing of PALMiCE3 HUDI141 model is given to the following.

Front/Left side



Front/Right side



[1] PWR LED
Comes on when the power is supplied to PALMiCE3. Power is supplied from the host computer through USB cable.

[2] BSY LED
Flickers during communication between PALMiCE3 and the target CPU.

[3] STS LED
Lit normally during user program execution.
Also, flashes in some cases to notify errors.
For details, refer to the user's manual.

[4] TARGET connector
14-pin connector for connecting PALMiCE3 to the target system.

[5] $\overline{\text{RST}}$
Connect RSTOUT_GND probe (on RSTOUT end) to be connected to reset circuit in the target system.

[6] EXT
Currently not used.

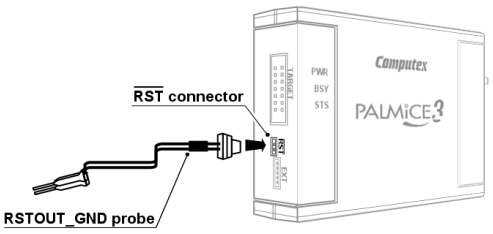
[7] Power switch
Turns ON/OFF the PALMiCE3's power. Power input state can be checked with [1] POWER LED.

[8] USB connector
Connect USB cable. (mini-B type connector)

2.3.1 RSTOUT_GND probe

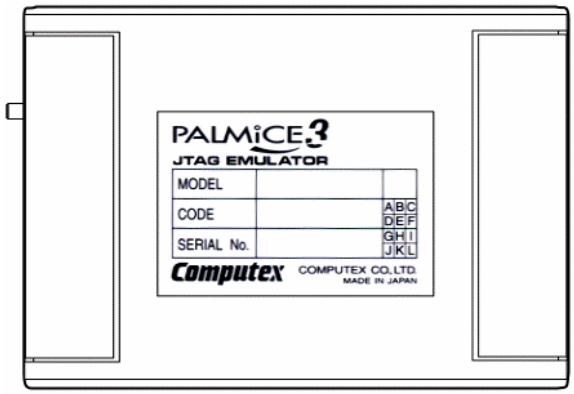
RSTOUT_GND probe is composed of RSTOUT end and GND end.

RSTOUT end is to be used when you are using PALMiCE3 HUDI141 model and outputting reset signal to the target system. It is for use in PALMiCE3 SH.



2.3.2 Hardware revision

The sticker with PALMiCE3 information is placed at the back of PALMiCE3 main unit.



Back side of PALMiCE3 main unit

How revision sticker reads

Read the number given on the upper side and the last alphabet shaded with black.

Example 1): Hardware revision 1-B

1		
A	**B**	C
D	E	F
G	H	I
J	K	L

In Example 1), PALMiCE3 hardware revision reads as 1-B.

Example 2): Hardware revision 2-0

2		
A	B	C
D	E	F
G	H	I
J	K	L

In Example 2), where alphabets are not shaded, PALMiCE3 hardware revision reads as 2-0.

Chapter 3 Target Interface Specifications

3.1 Introduction

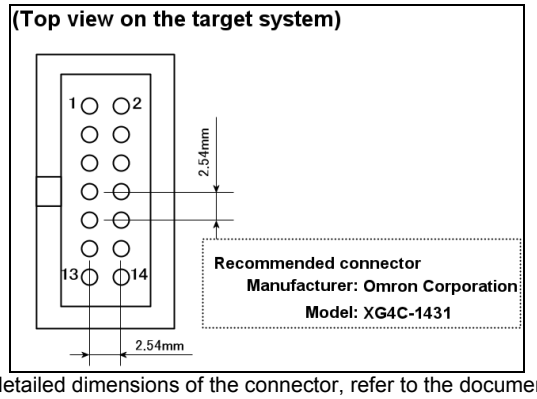
This Chapter spells out H-UDI interface specifications for connecting PALMiCE3 HUDI141 to the target system.

3.2 H-UDI interface

The interface for connecting PALMiCE3 HUDI141 to the target system is described.
Target interface varies from CPU to CPU.

3.2.1 Shape of the connector for debugger

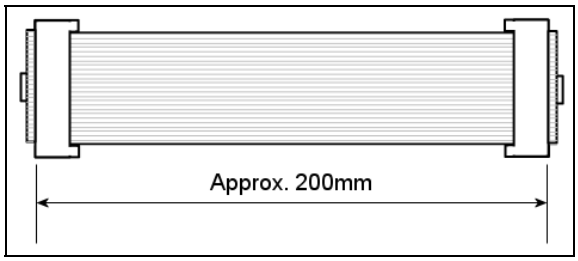
The shape of connector(14-pin MIL connector) for debugger to be mounted on the target system side is as follows.



(For detailed dimensions of the connector, refer to the documentations provided by manufacturers.)

3.2.2 Dimensions of H-UDI cable

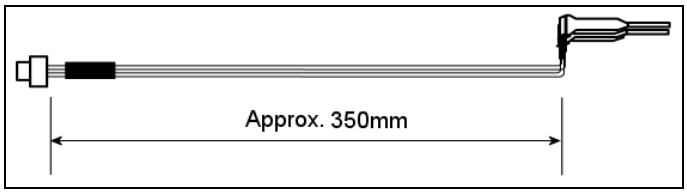
The dimensions of H-UDI cable for connecting PALMiCE3 HUDI141 to the target system are as follows.



(For detailed dimensions of the connector, refer to the documentations provided by manufacturers.)

3.2.3 Dimensions of RSTOUT_GND probe

The dimensions of RSTOUT_GND probe are as follows.

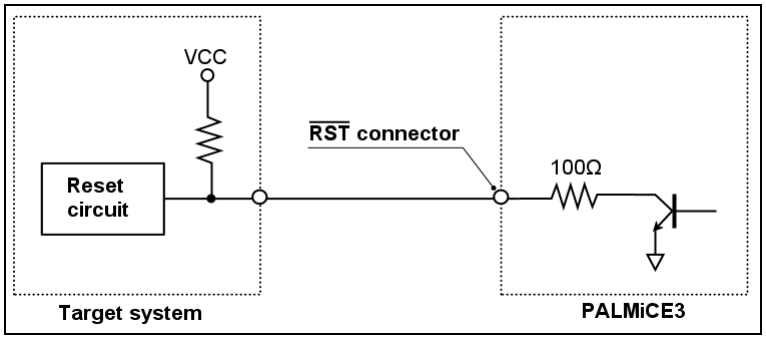


3.2.4 Specifications of H-UDI interface signals

Input voltage level	VIL	Target voltage ÷ 2 – 0.35
	VIH	Target voltage ÷ 2 + 0.35
Output voltage level	VOL	Under 0.2V
	VOH	Follows the target voltage (1.65V - 5.5V)

3.2.5 RSTOUT signal

/RSTOUT signal is a signal for requesting reset from PALMiCE3 to the target system. The signal will be output by open-collector circuit if from PALMiCE3.
Connect this signal to the reset circuit of the whole target system inclusive of CPU and peripherals. It is required for synchronization at CSIDE startup.
If connection can not be established, you can still press reset switch button on the target system or use power-on-reset.



3.2.6 The target interface on PALMiCE3 side

The target interface on PALMiCE3 side is described.

No.	Remarks	No.	Remarks
1	33Ω Series	2	GND
3	33Ω Series	4	33ΩSeries 100KΩPull-down
5	33Ω Series 10KΩ Pull-up*1	6	33ΩSeries 10KΩPull-up*1
7	100Ω Series 10KΩ Pull-up*1	8	550KΩPull-down
9	33Ω Series	10	33ΩSeries 10KΩPull-up*1
11	33Ω Series	12	GND
13	100Ω Series 100KΩ Pull-down	14	GND

*1: Potential has been pulled up to the same level as target VCC reference voltage.

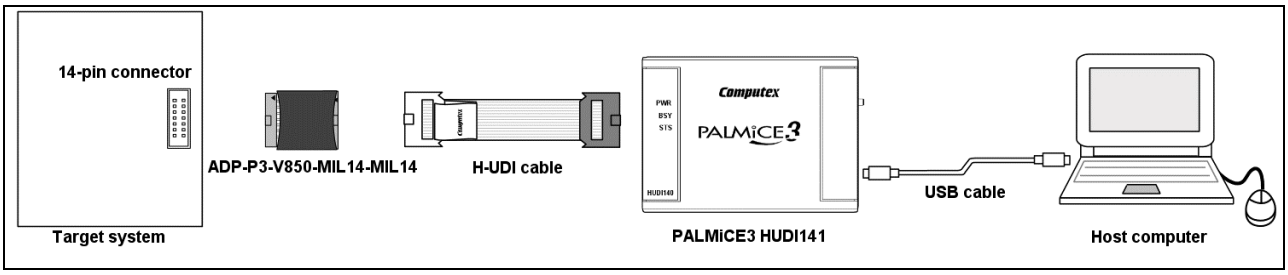
Note

Besides this manual, also, consult "Technical Information on PALMiCE3" up on our website
(http://www.computex.co.jp/eg/)

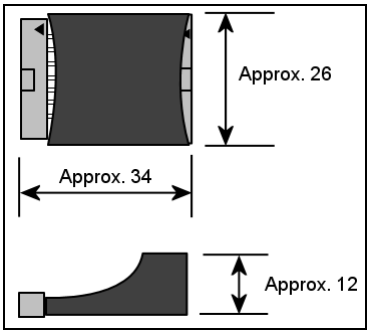
3.2.7 ADP-P3-V850-MIL14-MIL14 adapter

■When using PALMiCE3 V850

If the product you use is PALMiCE3-V850, for connection to the target system, "ADP-P3-V850-MIL14-MIL14" conversion adapter will be required. It is to be used by connecting to H-UDI cable.



Dimensions and the target interface



(Unit : mm)

No.	Remarks	No.	Remarks
1	33ΩSeries	2	GND
3	33ΩSeries	4	33ΩSeries 100KΩPull-down
5	33ΩSeries 10KΩPull-up*1	6	33ΩSeries 10KΩPull-up*1
7	33ΩSeries	8	550KΩPull-down
9	33ΩSeries	10	33ΩSeries 10KΩPull-up*1
11	100ΩSeries 10KΩPull-up*1	12	GND
13	100ΩSeries 100KΩPull-down	14	GND

*1: Potential has been pulled up to the same level as target VCC reference voltage.

Note

Besides this manual, also, consult "Technical Information on PALMiCE3" up on our website
(http://www.computex.co.jp/eg/)

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PALMiCE3 HUDI141 model Hardware Manual
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Our Tokyo Sales Office has been relocated to the following address since October 2013.

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