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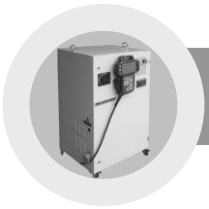
WARNING

INSTALLATION SHOULD ONLY BE PERFORMED BY QUALIFIED INSTALLATION PERSONNEL AND MUST CONFORM TO ALL NATIONAL AND LOCAL CODES



Hi5 Controller Function Manual

TP's Embedded HMI - Xpanel

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1 Overview

1.1. Prior knowledge

The users should have knowledge on the following to understand this manual.

- Method for operating the Hi5 controller
- Method for using the Hi5 controller's embedded PLC

1.2. About TP's embedded HMI function

Human machine interface (HMI) is a system that displays the process in a way for people to easily recognize and is also a system that carries out recording and provides warnings about the process. It also helps people easily operate the process. Different from previous versions, recent HMI products are equipped with high-definition graphic touch panels to provide a screen that can change dynamically in line with various situations, which allows users to operate in a very integrated and intuitive environment.
In the case of the Hi5 controller, Proface's HMI products can be connected to the embedded PLC through MODBUS. However, when the TP's embedded HMI function is used, the teaching pendant's touch screen can be used as HMI, which reduces the costs of purchasing a separate commercial HMI hardware.

Figure 1.1 Commercial HMI and TP's embedded HMI

The Hi5 controller TP's embedded HMI is highly reliable as it is made by building DKT Systems' Xpanel series software in the teaching pendant. As the Xpanel Designer for Hi5 software, which is an easy and powerful HMI development environment, is used, it is possible to produce drawing screens with diverse functions. In addition, it is also possible to connect embedded relays to individual drawing objects easily.

Reference

- For the method for drawing by using XpanelDesigner, refer to the training materials and help information of XpanelDesigner

2

Installation and Starting of HMI

※ When the HMI installation file that is already made needs to be installed in the Hi5 controller, there is no need to install and use XpanelDesigner. Refer to the information starting from 2.4.

2.1. Installation of XpanelDesigner for Hi5

Run the XpanelDesigner installation file. Follow the instructions by clicking the [Next(N)] button.
In the font selection dialog box, it is okay to just click the [Cancel] button without adding a font.

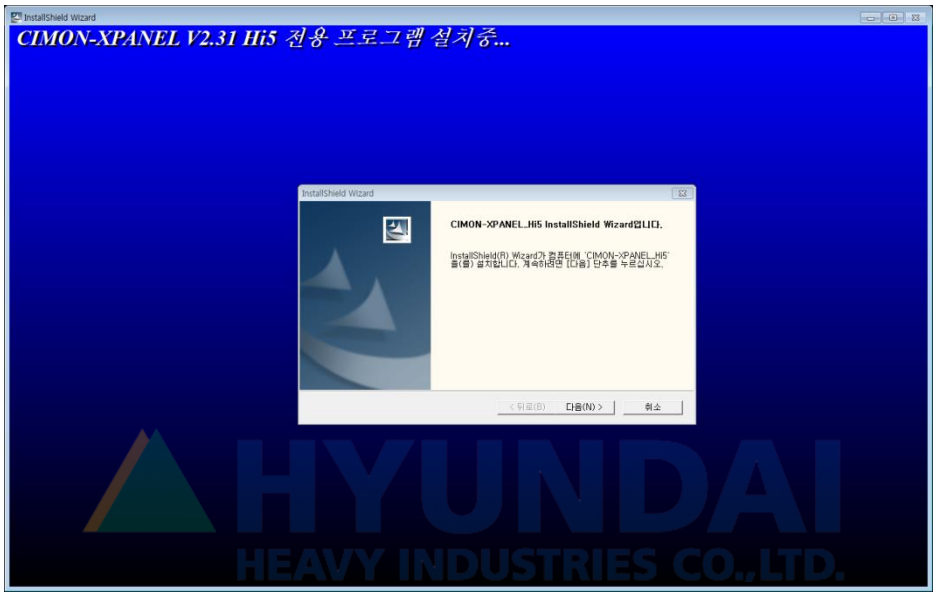

Figure 2.1 XpanelDesigner installation dialog box

Figure 2.2 Font selection dialog box

2.2. HMI project preparation

It is possible to open the prepared projects by selecting the “File — Project Open” menu.

Figure 2.3 XpanelDesigner editing screen example

It is possible to select the Hi5 controller’s relays by using device addresses and to type in the tag name directly. For more details about the method for preparing a new project, refer to the training materials and help information of XpanelDesigner.

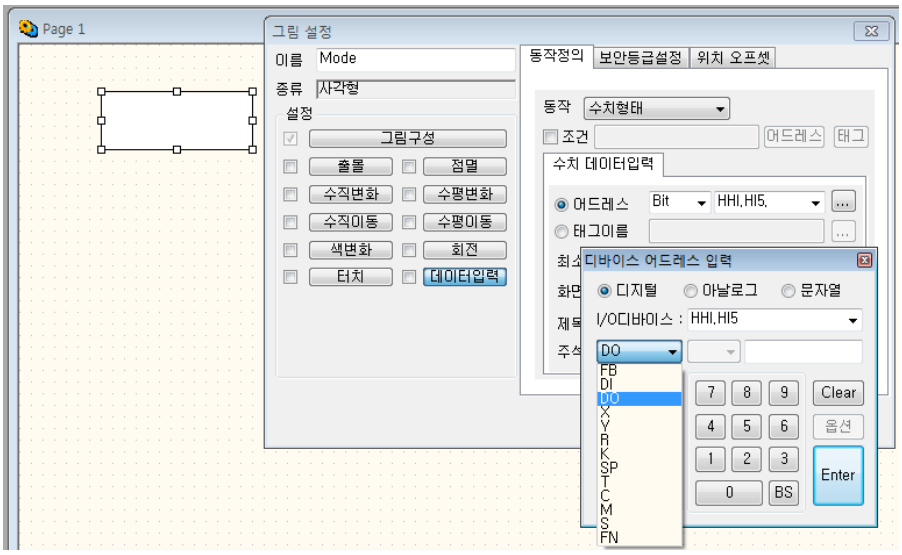

Figure 2.4 Device address inputting

The function of ending Xpanel can be set by using a command expression by selecting a switch lamp or an object.

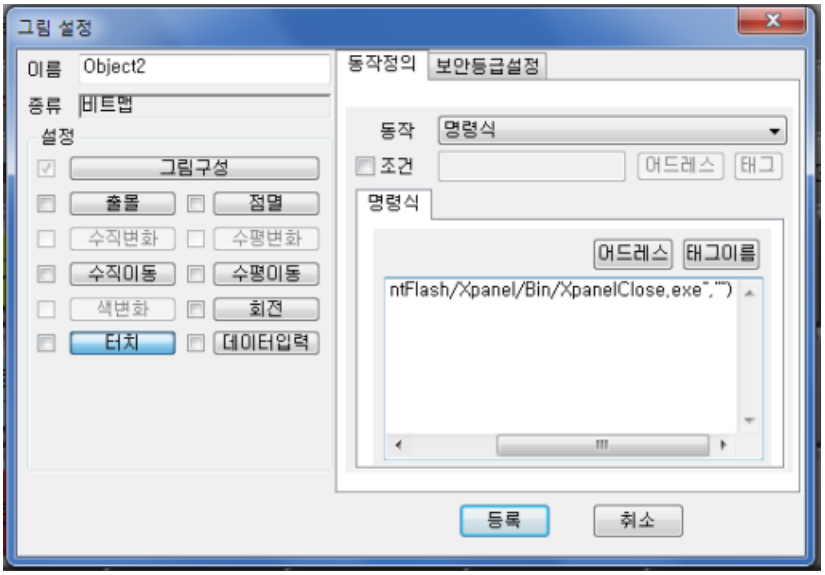

Figure 2.5 Xpanel ending command expression setting

Command expression: RunApp("/ResidentFlash/Xpanel/Bin/XpanelClose.exe","");

XpanelDesigner for Hi5 supports most functions of XpanelDesigner but with the following restrictions.

(1) The project type is fixed as Hi5 TP (7.0). It is not possible to change the screen size.

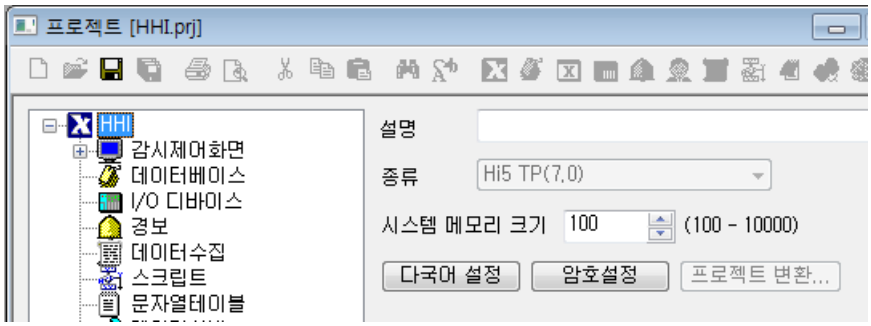

Figure 2.6 Tool – Project

(2) It is not possible to set the I/O device because only the Hi5 controller is allowed to be connected.

Figure 2.7 Impossible to set the I/O device

2.3. HMI project downloading

First, install a USB memory drive in a PC and then create a blank folder, Install_Xpanel, with the path as shown below.

{USB drive name}/hi5/applet/Install_Xpanel/

When a project is prepared completely in XpanelDesigner, select the "Online — Making a mobile disk for execution" menu. When it comes to the saving path, select the Install_Xpanel that was created previously (once the hard disk's path is selected, it is okay to copy the generated Xpanel folder in the USB memory drive's Install_Xpanel).

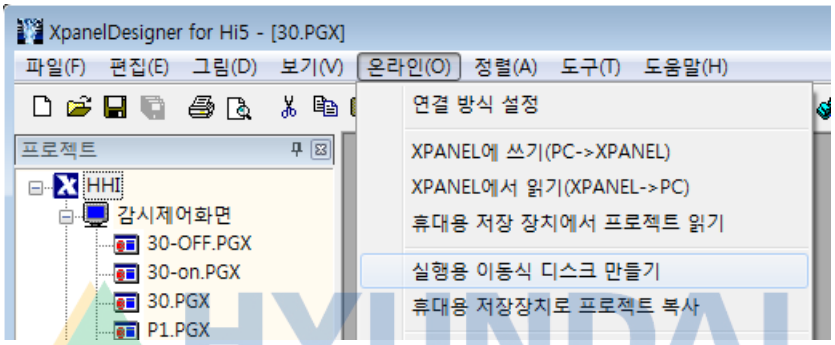

Figure 2.8 Making a mobile disk for execution

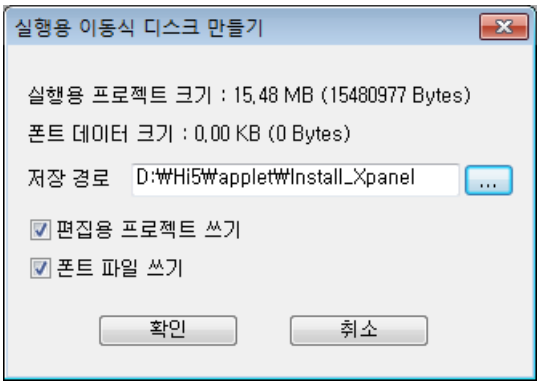

Figure 2.9 Saving path selection

In the selected path, the Xpanel folder that contains the running time software and drawings will be generated. It is necessary to copy the files (Hi5Install.cfg, Hi5Install.exe, and a shortcut to Xpanel) that are provided together with the installation files into the Install_Xpanel folder.

The USB memory drive should be configured now as shown in the following figure.

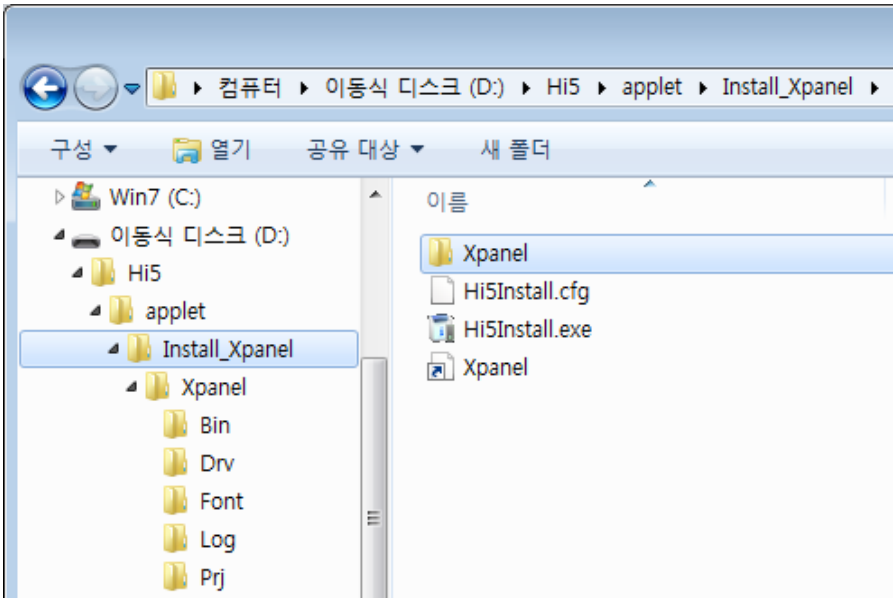

Figure 2.10 Results of copying the installation files into a USB memory drive

2.4. HMI installation

(1) Insert the USB memory drive into the Hi5 teaching pendant.

(2) Enter the 『[F1]: Service』 — 『10: Applet』 screen and then click the 『[F1]: USB』 button.

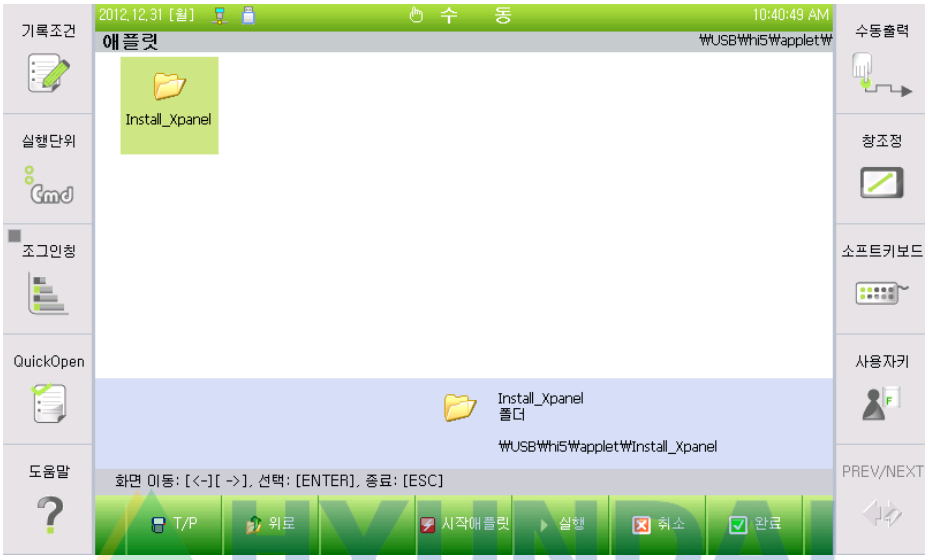

Figure 2.11 Results of selecting USB in the applet screen

(3) Place the cursor on the Install_Xpanel folder by using the direction cursor key and then press the [ENTER] key.

Figure 2.12 Entering the Install_Xpanel folder

(4) Enter the Hi5Install icon and then click the 『[F5]: Execute』 button. When the installation dialog box appears as shown in Figure 2.13, click the Start button.

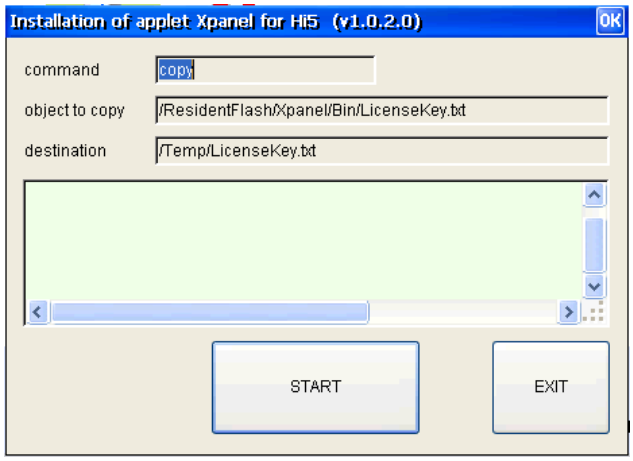

Figure 2.13 HMI installation dialog box

(5) When the installation is completed, click the Exit button to close the dialog box.

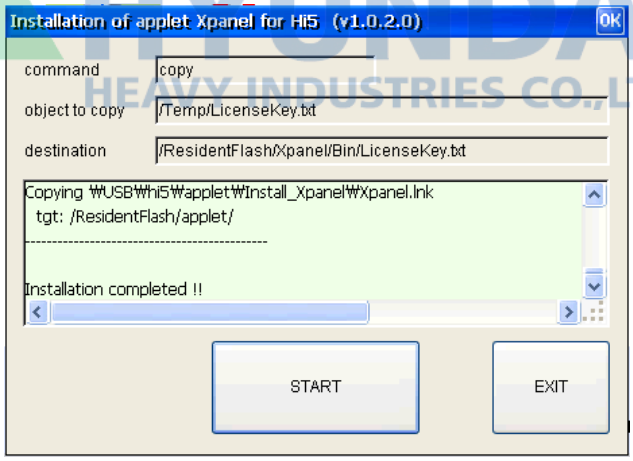

Figure 2.14 Dialog box when installation is completed

(6) When the 『[F1]: T/P』 key is clicked, the user can see the newly generated Xpanel applet icon.

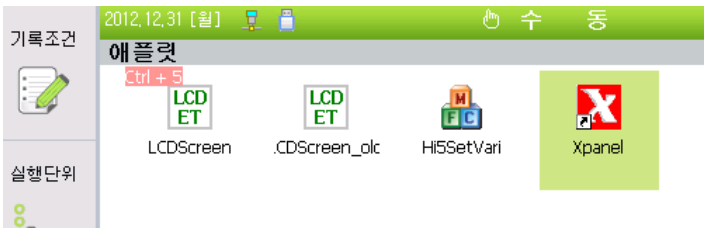

Figure 2.15 Applet installed completely

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3 HMI Execution

3.1. HMI execution and license code inputting

Enter the 『[F1]: Service』 — 『10: Applet』screen.

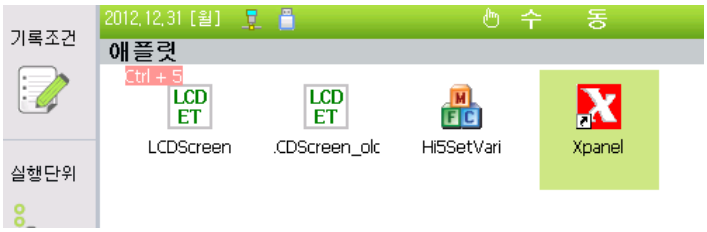

Figure 3.1 Applet screen

In the applet screen, select Xpanel and press the 『[F5]: Start』 key. Then, a dialog box that requests a license code will appear. Request the issuing of a license code by writing one of the Mac addresses displayed on the dialog box. Input the purchased license code into the dialog box and then press the Save and Close buttons to close the dialog box.

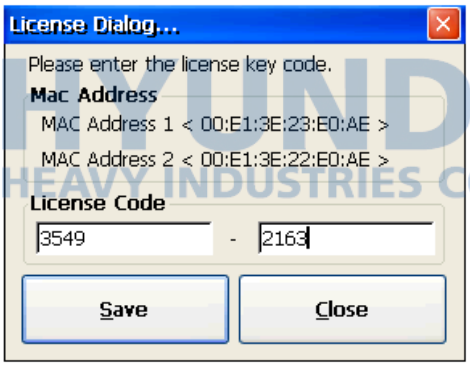

Figure 3.2 License dialog box

When the code is correct, the HMI drawing screen that was downloaded will be executed without the license dialog being shown up when the Xpanel is run again. Once inputted, a license code will be maintained even when the newly updated drawing is installed.

Figure 3.3 Drawing screen execution example

3.2. Shortcut key

Designate a shortcut key when required to execute HMI on an arbitrary screen without entering the applet screen.

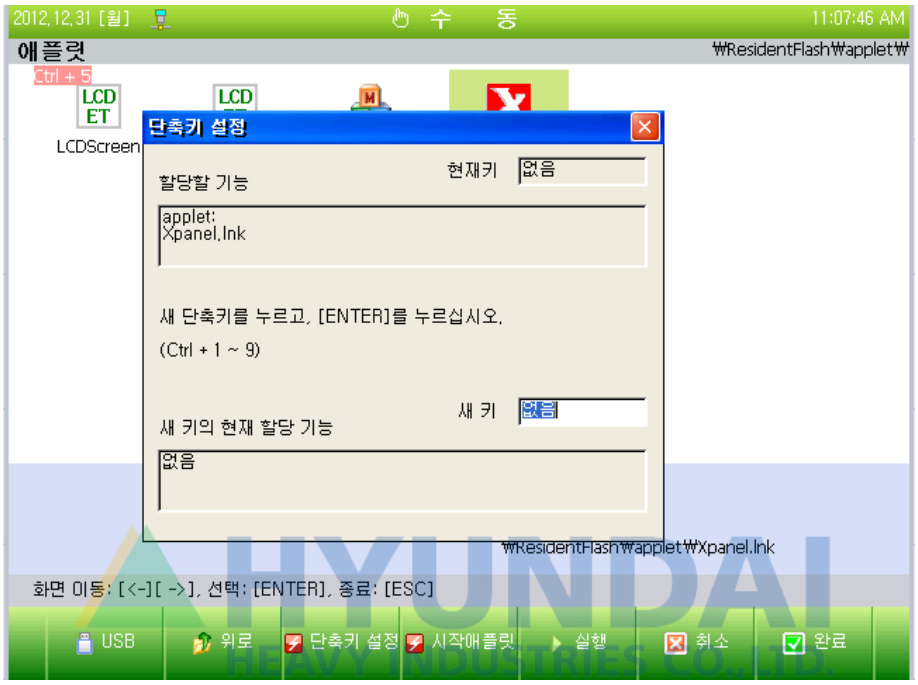

Figure 3.4 Shortcut key setting dialog box

In the applet screen, press the 『[F3]: Setting a shortcut key』. The shortcut key setting dialog box will then show up. Press the desired shortcut key and set it to "New key." Available shortcut keys are CTRL + 1–9. After leaving the dialog box by pressing the [Enter] key, users must press the 『[F7]: Complete』 button to save the settings.

Figure 3.5 Shortcut key set

The HMI drawing screen will appear when the set shortcut key on the arbitrary screen of the teaching pendant is pressed.

3.3. Task shifting

While the HMI drawing screen is being executed, if a specific screen is loaded for the first time, it will take some time for the data to load. Accordingly, the screen will shift somewhat slowly. To shift the teaching pendant's basic functions and the HMI function swiftly while HMI is being executed, the task shifting function can be used.
While HMI is being executed, if the teaching pendant's CTRL + F1 keys are pressed, the teaching pendant's screen with basic functions will be activated without executing HMI. During this state, the HMI screen will be reactivated by pressing the CTRL + F1 keys.

Figure 3.6 Task shifting

While HMI is being executed as the background, the applet icon will be displayed on the title bar.

Figure 3.7 Applet icon

Reference

- As shown in the next clause, if the SW136 relay is not 0, task shifting by CTRL + F1 will not be performed.

3.4. Monitoring and controlling by SW relays

Of the embedded PLC relays, SW135 and SW136 are used for monitoring and controlling the state of the applet execution. When using them, it will be possible to check the execution state of HMI and to carry out remote execution and task shifting through the I/O signals from outside the Hi5 controller.

Table 3-1 Applet-related SW relays

Relays	Description	
SW135 (Read only)	Upper byte (Applet state)	Lower byte (Shortcut number)
	0: Not executed 1: Applet activated 2: Applet not activated	1–9: CTRL + 1–9
SW136 (Read and write)	Upper byte (Command)	Lower byte (Shortcut number)
	1: To activate applet 2: To deactivate applet	-
	3: End applet forcibly	For emergency. It is recommended to use the applet's own ending function first.
	8: Execute the designated shortcut key number	1–9: CTRL + 1–9

Reference

- The command by SW136 will be executed only once when the value changes.
- Two applets cannot be executed simultaneously.

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