

HLS (MKY36) USB Unit

**HLS-36USB**

Product Manual

## Preface

Thank you for purchasing the StepTechnica product.

### ● Please check the bundled items.

This product consists of the following contents. Please be sure to check before you use.

If you discover damaged or missing items, contact your retailer.

• USB terminal [HLS-36USB]	1
• HLS-36USB Annex guide	1
• MicroUSB cable	1

### ● Safety precautions

For safe use of this product, please be sure to observe the content that is described in this document.

This document provides safety information using the following symbols to prevent accidents resulting in injury or death and the destruction of equipment and resources. These are serious matters related to safety. Understand the meanings to operate the equipment safely.

 <b>DANGER</b>	DANGER indicates an imminently hazardous situation which, if not avoided, may result in death or serious injury.
Do not use the product where it is exposed to flammable or corrosive gas. Doing so may result in an explosion, fire, electric shock, or failure.	

 <b>WARNING</b>	WARNING indicates a potentially hazardous situation which, if not avoided, may result in death or serious injury.
Installation and connection of this product must be done by engineer with electrical knowledge.	
Before installation and replacement, always turn off the power of this product. If not, it can cause fires and electric shock.	
Please use this product in a range of specifications and conditions stipulated in this document. If not, it can cause fires and electric shock.	
Please do not use this product in an area where water and chemicals may contact. It can cause fires and electric shock.	
If an error occurs, please immediately turn off the power. After removing the cause, please power on again. If not, it can cause fires and electric shock.	
This product is not designed for use in critical applications, such as life support (Nuclear and radiation related equipment, railway equipment, aviation equipment, marine equipment, medical equipment etc) systems.	

 <b>CAUTION</b>	CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage.
Do not strike or bend this product. It can cause malfunction, overheat, failure or breakage.	
Do not touch the terminal contacts of connectors with your hands. It can cause malfunction, overheat or failure.	
If the terminal contacts are accidentally touched, clean the contacts with industrial alcohol.	
Make sure that your PC can supply ample power to this product. Insufficiently energized products could cause malfunction, overheat, or failure.	
The specifications of this product are subject to change without prior notice for enhancement and quality improvement.	
Please do not attempt to disassemble, repair and modify this product. We assume no responsibility for the losses, damages or problems resulting from any attempt to do so.	
Regardless of the foregoing statements, StepTechnica is not liable for any damages whatsoever (including damages for loss of business profits) arising out of the use or inability to use this product including software.	

- Technical terms in this manual

Some of the terms that have been described in this document is different from the term in other HLS manuals. In this document, we use ordinary terms in order to make it more comprehensive in a variety of industrial fields. Expertise on HLS family, please understand the information based on our technical documents (manuals,etc.) A comparison table of terms is as follows.

Manual	This document
Center	Master
Center IC	Master IC
Satellite	Slave

- Related manuals

For the use of this product, also refer to the following documents in which describe HLS communication. For software development, please refer to the HLS-36USB Software Specifications.

- Hi-speed Link System Introduction Guide
- Hi-speed Link System Technical Guide (For Network)
- MKY36 User's Manual

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  - "HLS" (Japanese trademark registration number: 2645060) is licensed by Murata Manufacturing Co., Ltd.
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## Revision history

Date	Version	Content	Note
AUG 2018	1.0E	Issued the first edition	
APR 2020	1.1E	Added Windows 10 as supported OS	

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## Chapter 1 Product outline

HLS-36USB functions as a HLS master which can be connected to PC via USB interface.

MKY36, Master IC of HLS, is mounted on this product.

HLS-36USB provides more efficient use of MKY36 with library for Windows supported by StepTechnica.

This product is applied to evaluate HLS system or develop HLS slave.

This product is bus-powered USB device.

## Chapter 2 Names and functions of each part

This chapter describes the names and functions of each part.

### 2.1 Names and functions

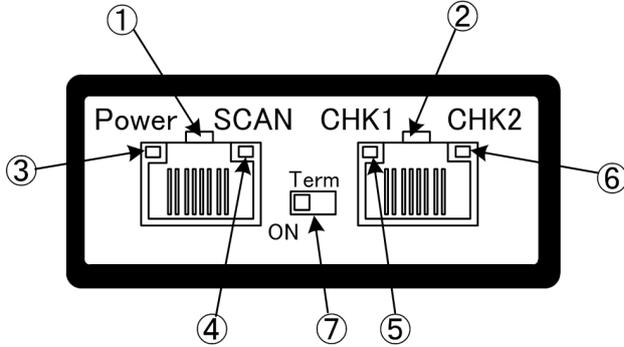


Fig.2-1 External view (front)

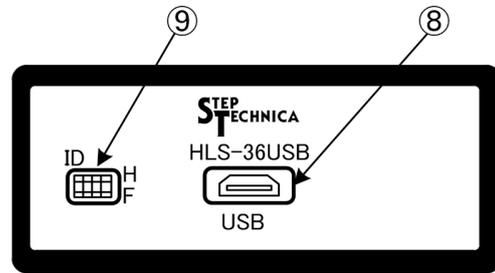


Fig.2-2 External view (back)

Table2-1 Names and meanings of each part

No.	Name	Type	Content																					
1	HLS_A	Connector	HLS communication connector (Refer to "2.2.1 HLS Communication connectors")																					
2	HLS_B	Connector	HLS communication connector (Refer to "2.2.1 HLS Communication connectors")																					
3	Power (G)	LED	During power supply, a green LED is lit.																					
4	SCAN (G)	LED	While HLS communication is active, a green LED is lit.																					
5	CHK1 (O)	LED	When HLS communication error occurs once, an orange LED is lit.																					
6	CHK2 (R)	LED	A red LED is lit when HLS communication errors have occurred three times consecutively at the same slave.																					
7	Term	Switch	HLS interface can be connected to a termination register of 100Ω by turning on this switch. (Factory-setting is ON state.)																					
8	USB	Connector	USB connector for PC																					
9	Option	Switch	<p>ID for identification of the HLS-36USB devices.</p> <table border="1"> <thead> <tr> <th>Switch</th> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr> <td>ID=0</td> <td>OFF</td> <td>OFF</td> </tr> <tr> <td>ID=1</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>ID=2</td> <td>OFF</td> <td>ON</td> </tr> <tr> <td>ID=3</td> <td>ON</td> <td>ON</td> </tr> </tbody> </table> <p>(Factory-setting is ID=0.)</p> <p>3 is unused switch. Always set this switch OFF.</p> <p>4 is switch to select HLS communication mode.</p> <table border="1"> <thead> <tr> <th></th> <th>4</th> </tr> </thead> <tbody> <tr> <td>Half-duplex mode</td> <td>OFF</td> </tr> <tr> <td>Full-duplex mode</td> <td>ON</td> </tr> </tbody> </table> <p>(Factory-setting is Half-duplex mode.)</p>	Switch	1	2	ID=0	OFF	OFF	ID=1	ON	OFF	ID=2	OFF	ON	ID=3	ON	ON		4	Half-duplex mode	OFF	Full-duplex mode	ON
Switch	1	2																						
ID=0	OFF	OFF																						
ID=1	ON	OFF																						
ID=2	OFF	ON																						
ID=3	ON	ON																						
	4																							
Half-duplex mode	OFF																							
Full-duplex mode	ON																							

## 2.2 Connectors

### 2.2.1 HLS communication connectors

Table2-2 HLS communication connector pin assignment in full-duplex mode

Pin number	Signal name
1	NC
2	NC
3	RXD+
4	TXD-
5	TXD+
6	RXD-
7	NC
8	Case Shield

Note ) HLS\_A and HLS\_B are the same pinout.

Table2-3 HLS communication connector pin assignment in half-duplex mode

Pin number	Signal name
1	NC
2	NC
3	NC
4	TRX-
5	TRX+
6	NC
7	NC
8	Case Shield

Note ) HLS\_A and HLS\_B are the same pinout.

Caution: If Term switch is ON, this product will be the termination.  
In this case, please do not connect the cable to the HLS\_B connector.  
Please connect the cable only to HLS\_A connector.  
If this product is not the termination, set the Term switch OFF.

## Chapter 3 Software setup

This chapter describes the software setup required to use this product.

Please download "Setup Disk" for HLS-36USB from our website's 'Download' page in advance.

URL: <https://www.steptecnica.com/en/download/index.html>

This software requires the following operating systems.

- Windows 10 (64bit / 32bit)
- Windows 8.1 (64bit / 32bit)
- Windows 8 (64bit / 32bit)
- Windows 7 (64bit / 32bit)

### 3.1 File structure

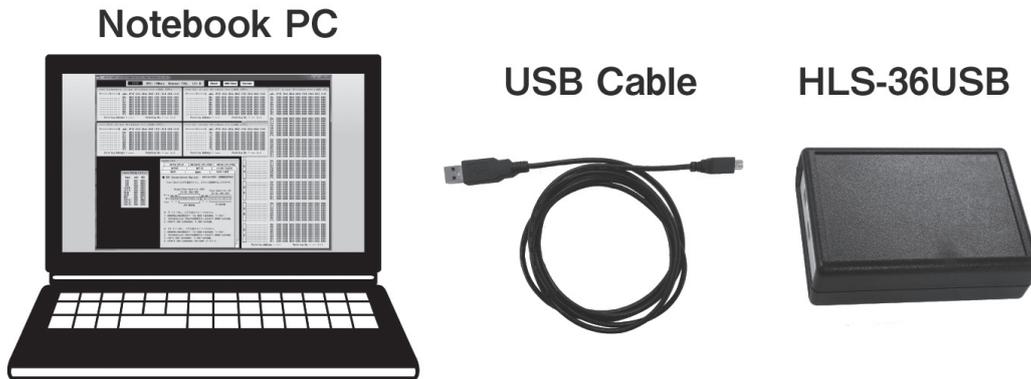
File structure of "Setup Disk" is the following.

HLS-36USB\_V100

+----	STD-HLS36USB_V1.0E.pdf	This document
+----	STD-HLS36USB-SW_V1.0E.pdf	Software specification
+----	DLL_Ver.1.0.0	DLL folder
	+ ---- x86	Library folder for 32bitOS
	---- hls36usb.dll	Dynamic library for 32bitOS
	---- hls36usb.lib	Static library for 32bitOS
	---- hls36usb.h	Header files of the library function
	+ ---- x64	Library folder for 64bitOS
	---- hls36usb.dll	Dynamic library for 64bitOS
	---- hls36usb.lib	Static library for 64bitOS
	---- hls36usb.h	Header files of the library function
+----	Driver_Ver.1.0.0	Driver folder
	---- hls36usb.cat	Catalog file
	---- hls36usb.inf	System definition file
	---- dpinst_x86.exe	Driver installation file for 32bitOS
	---- dpinst_x64.exe	Driver installation file for 64bitOS
	---- dpinst.xml	Configuration files for dpinst
	---- 36usb.bmp	Background image file for the dpinst
	---- HLS.ico	Icon file for dpinst
+----	HLSeditor36E for HLS-36USB_Ver.1.0.0	Editor software folder
	----setup.exe	Installation file of the editor software
	---- HLSeditor36E.CAB	Cabinet file for installation
	---- SETUP.LST	LST file for installation

### 3.2 How to connect to PC

Connect the PC and HLS-36USB using MicroUSB cable.



### 3.3 How to install driver software

This section describes the driver installation procedure.

In this document, how to install the driver on 64-bit version of Windows 7 is illustrated.

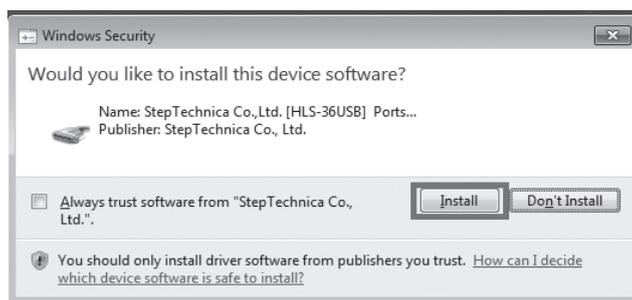
1. Power on the PC, start Windows, please login with an administrator account (such as an Administrator.)
2. Select "Driver\_Ver.1.0.0\dpinst\_x64.exe", and run.

	36usb.bmp	8/5/2016 5:11 PM	Bitmap image	177 KB
	dpinst.xml	9/5/2016 1:26 PM	XML Document	2 KB
	dpinst_x64.exe	12/3/2014 1:13 PM	Application	1,016 KB
	dpinst_x86.exe	9/5/2016 1:10 PM	Application	894 KB
	HLS.ico	12/5/2012 3:48 PM	Icon	6 KB
	hls36usb.cat	9/5/2016 12:55 PM	Security Catalog	8 KB
	hls36usb.inf	8/6/2016 2:37 PM	Setup Information	2 KB

3. User Account Control dialog box will show up. Select "Yes".
4. Driver installation window is displayed. Select "Next".



5. Windows Security dialog box will show up. Select "Install".



6. Select "Finish".



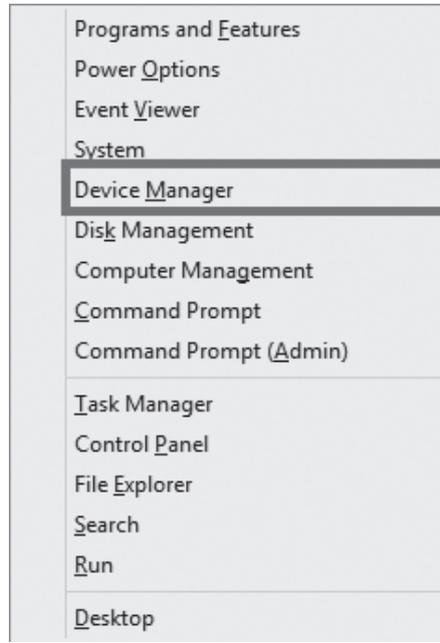
### 3.4 How to check HLS-36USB

Start the "Device Manager". Make sure that "HLS-36USB" is identified.

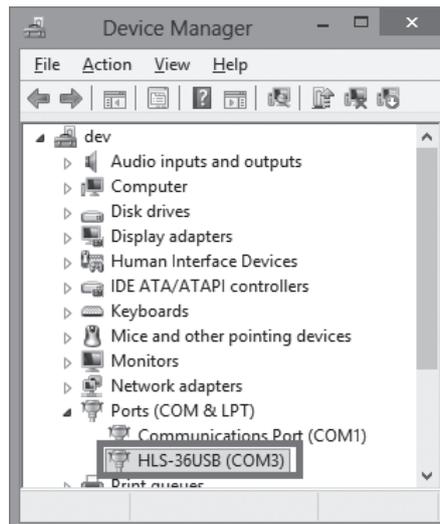
How to open device manager is depending on PC system environment.

- How to open device manager in Windows8 / 8.1

1. Hold down the "Windows" key and press the [X] key, then select "Device Manager" from the context menu.

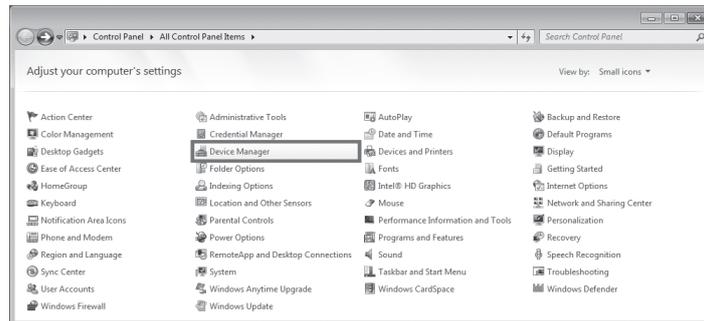


2. Device Manager window shows up. List is displayed by double-clicking on the "Ports □COM & LPT□". Make sure that there is a "HLS-36USB" in the list.

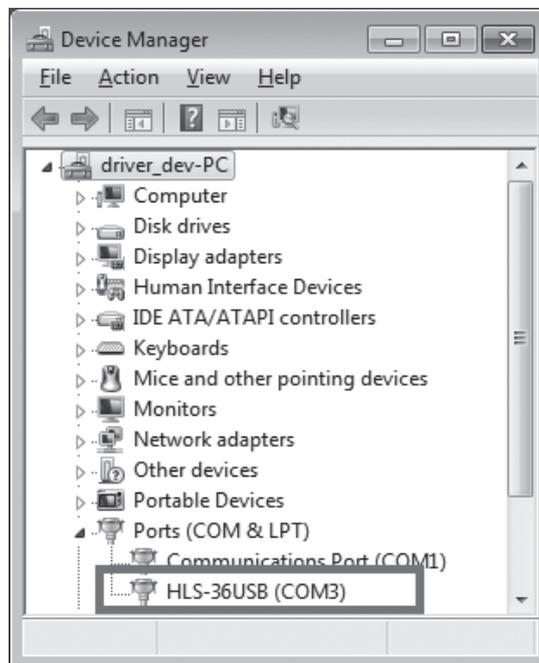


- How to open device manager in Windows 7

1. Open "Control Panel" and select "Device Manager".



2. Device Manager will be displayed. List is displayed by double-clicking on the "Ports (COM & LPT)". Make sure that there is a "HLS-36USB" in the list.



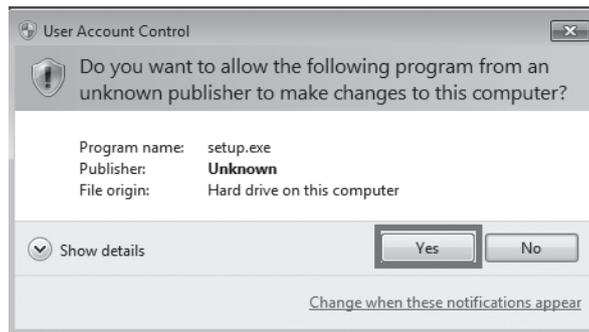
3.5 How to install HLSeditor36E for HLS-36USB

This chapter describes how to install the GUI support tool for HLS-36USB.

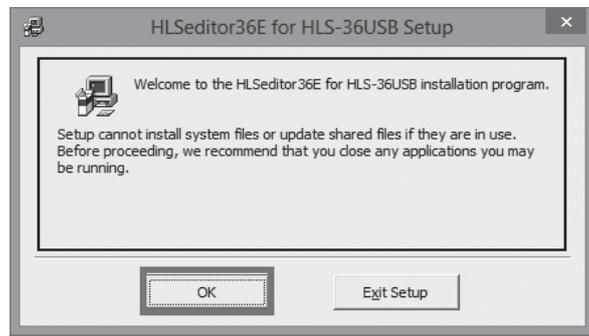
1. Run "HLSeditor36E for HLS-36USB\_Ver.1.0.0 \ setup.exe".

Name	Date modified	Type	Size
HLSeditor36E.CAB	10/21/2016 3:20 PM	Cabinet File	2,871 KB
setup.exe	2/23/2004 12:00 AM	Application	137 KB
SETUP.LST	10/21/2016 3:20 PM	LST File	4 KB

2. User Account Control dialog box shows up. Select "Yes".



3. HLSeditor36E for HLS-36USB Setup dialog box shows up. Select "OK".



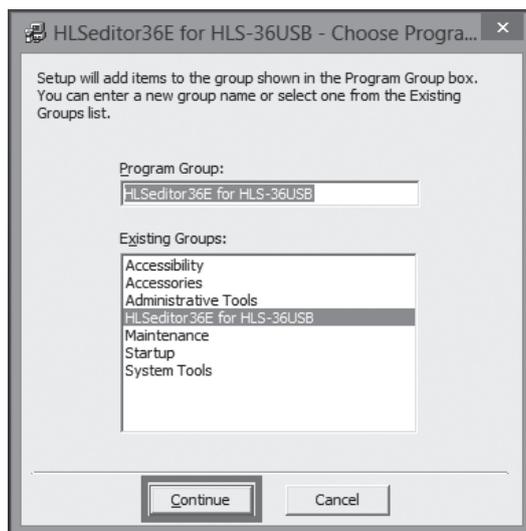
4. Specify an installation directory of HLSeditor36E for HLS-36USB.

If you want to change the installation directory, please click "Change Directory".

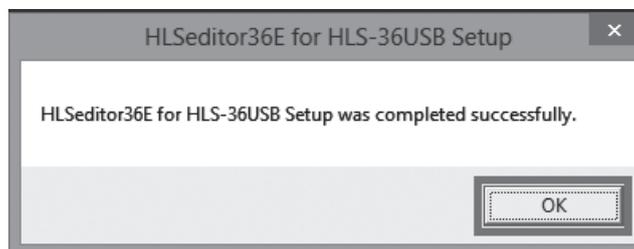
Installation starts by clicking on the block-shaped button.



5. A dialog box to select the program group of HLSeditor36E for HLS-36USB shows up. Select "Continue".



6. The dialog box shows up messaging that the setup process was completed. Press "OK" button.



## Chapter 4 Hardware

### 4.1 Main specifications

Table4-1 Main specifications

Power supply method	MicroUSB bus power
The supply voltage fluctuation range	4.75V to 5.25V
Consumption current	400mA or less
Operating frequency	48MHz (MKY36)
Number of concurrent use	4 (Up to 4 units can be connected to one PC.)
Operating temperature	0°C to 40°C
Storage temperature	0°C to 80°C
Operating humidity	0% to 90% (Without condensation)
Atmospheric conditions	Without corrosive gas.
Size	66.5(W)× 28(H)× 92(D)mm (Not including rubber feet)
Weight	100g (typ.)

### 4.2 HLS communication specifications

Table4-2 HLS communication specifications

Communication method	Full-duplex or half-duplex can be selected by switch and software program.
Communication configuration	Multi-drop configuration.
Communication cable	Shielded twisted-pair cable (CAT-5 or greater straight-through cables can be used.)
Interfaces	RJ45 (2 pcs), RS485 level, differential type, pulse transformer isolation system.
Transfer rate	12Mbps/6Mbps/3Mbps (Rates can be selected by software program.)
Termination	Enable / Disable can be selected by switching.
Operation indicator	Communication is active : SCAN LED is lit green Communication is stopped : SCAN LED is lit off

### 4.3 Interfaces and PC system requirements

Table4-3 Interfaces and PC system requirements

USB bus specification	USB2.0 / 1.1
USB Interface	MicroUSB*1
Supported OS	Windows 10 (64bit / 32bit) Windows 8.1 (64bit / 32bit) Windows 8 (64bit / 32bit) Windows 7 (64bit / 32bit)
Accessories	USB Cable
Provided software	Windows Driver Library for Windows HLSeditor36E

\*1 Operation is not guaranteed when the product is connected to PC via USB hub.

4.4 HLS interface

4.4.1 Full-duplex communication

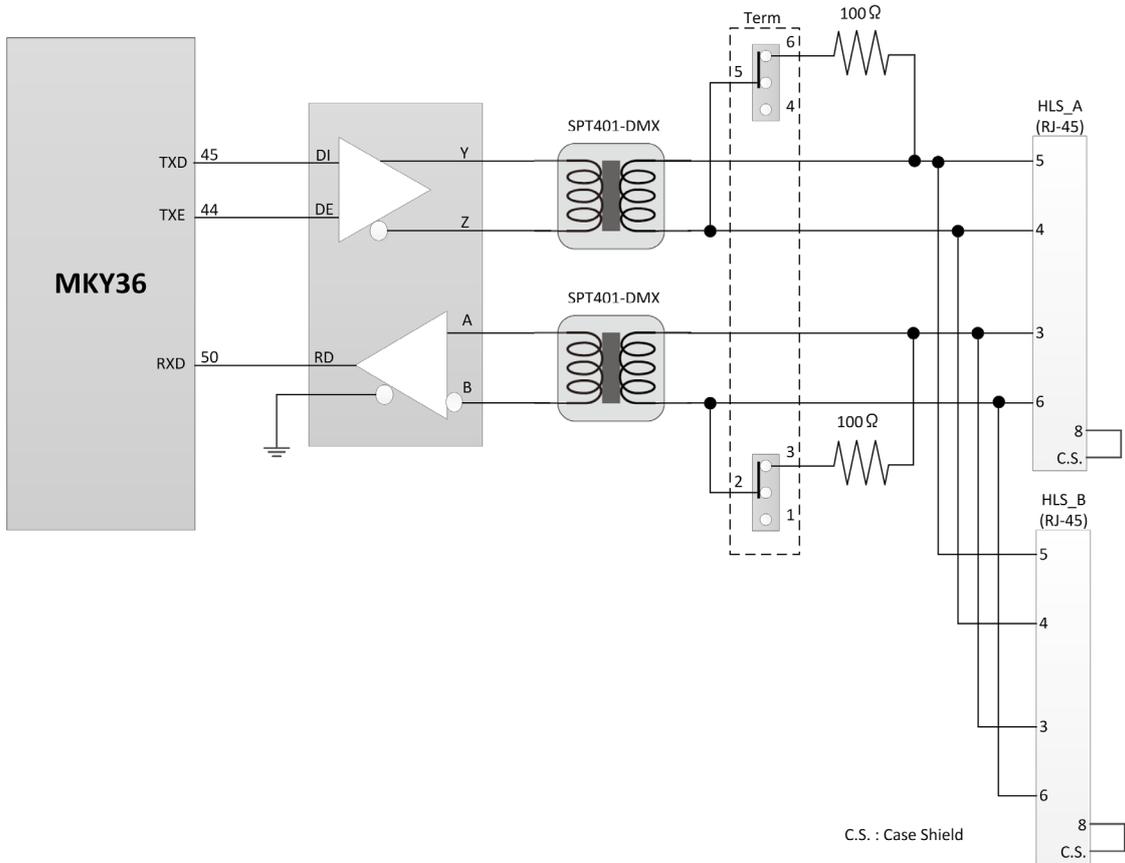


Fig.4-1 Full-duplex communication specifications

4.4.2 Half-duplex communication

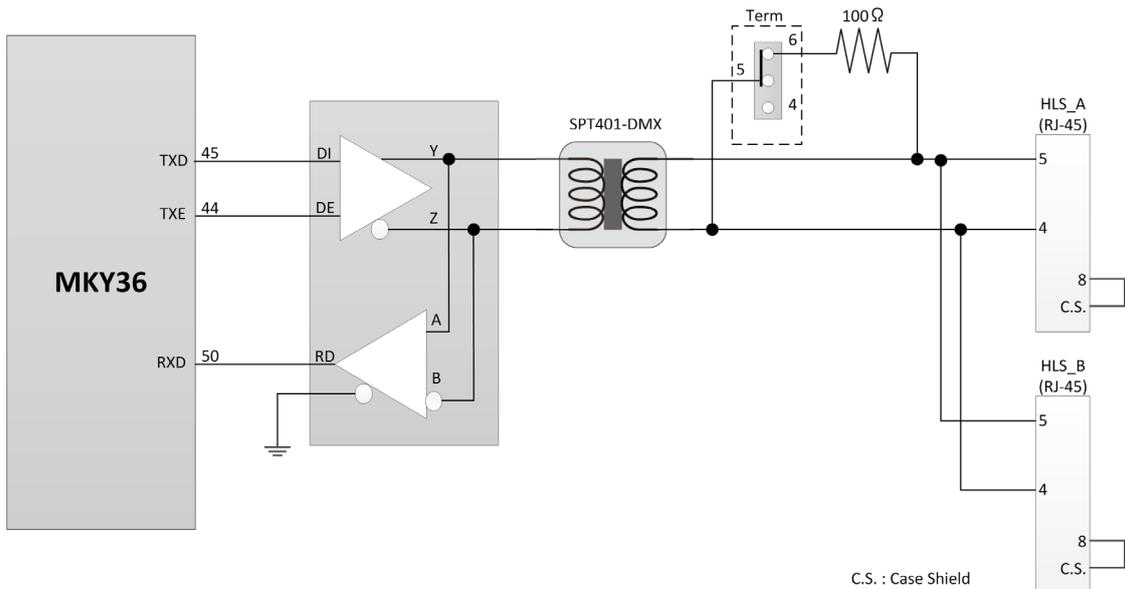


Fig.4-2 Half-duplex communication specifications

4.5 Dimension drawing

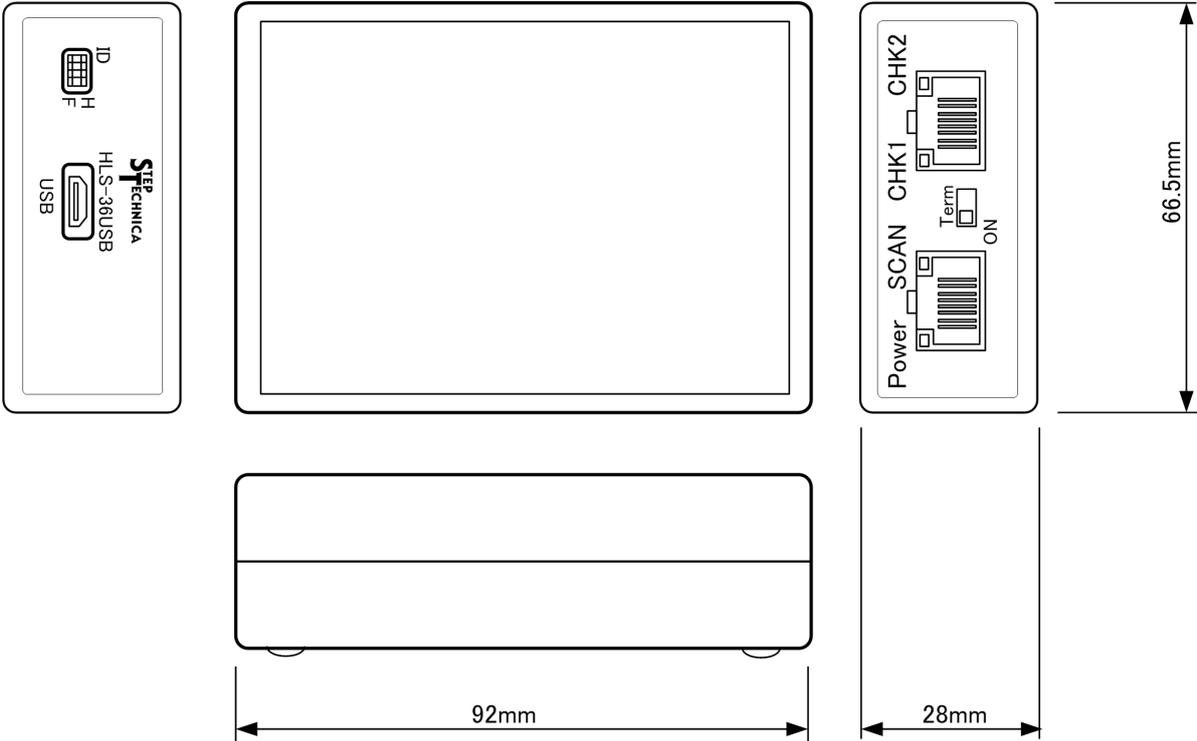


Fig.4-3 Dimension drawing

## Notes

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Before using this product, please confirm that this is the latest version of this document.
2. Technical information in this document, such as explanations and circuit examples, are just for references to use this product in a proper way.  
When actually using this product, always fully evaluate the entire system according to the design purpose based on considerations of peripheral circuits and environment.  
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**HLS (MKY36) USB Unit**

**HLS-36USB**

**Product Manual**

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