

Linux RS-485 DLL User Manual



1. Usage environment

❖ Test Environment

- Ubuntu - 22.04.3
- Raspberry Pi OS - Bullseye (23.05.03 Release)
- Raspberry Pi OS - Bookworm (23.12.05 Release)

2. How to Download

1) Visit the FASTECH website.

<https://fastech-motions.com>

The screenshot shows the FASTECH website with a yellow header. The header includes the FASTECH logo with the tagline "Fast Accurate Smooth Motion", navigation links for PRODUCTS, COMPANY, DOWNLOADS, ONLINE EXHIBITION, WEBINARS, DEMOS, and SUPPORT, and social media icons for KOR, Facebook, and YouTube. A search bar is located below the header. The main content area features a "NEW PRODUCT" badge, images of the Ezi-SPEED motor speed control system components, and the title "RS-485 Modbus-RTU Based Motor Speed Control System". A list of features is provided, including AC Input (220V) BLDC Motor Speed Control System, Modbus-RTU Based on RS-485 Communication, Compact - tLight Weight - High Power - High Efficiency Brushless Motor, Wide Speed Control Range (50~4000 r/min), Stable Speed Control by Vector Control (Speed Regulation within 0.2%), 'Torque Limit' and 'Load Holding' Functions Supported, and Various Product Line-Up (30, 60, 120, 200, 400W). A "Learn More" button is present. At the bottom, there are icons for Product, Motor Guide, Download, FAQ, and Q & A.

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Fast Accurate Smooth Motion

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Type keywords to search

Ezi-SPEED **Modbus RTU**
BLDC Motor Speed Control System

NEW PRODUCT

RS-485 Modbus-RTU Based Motor Speed Control System

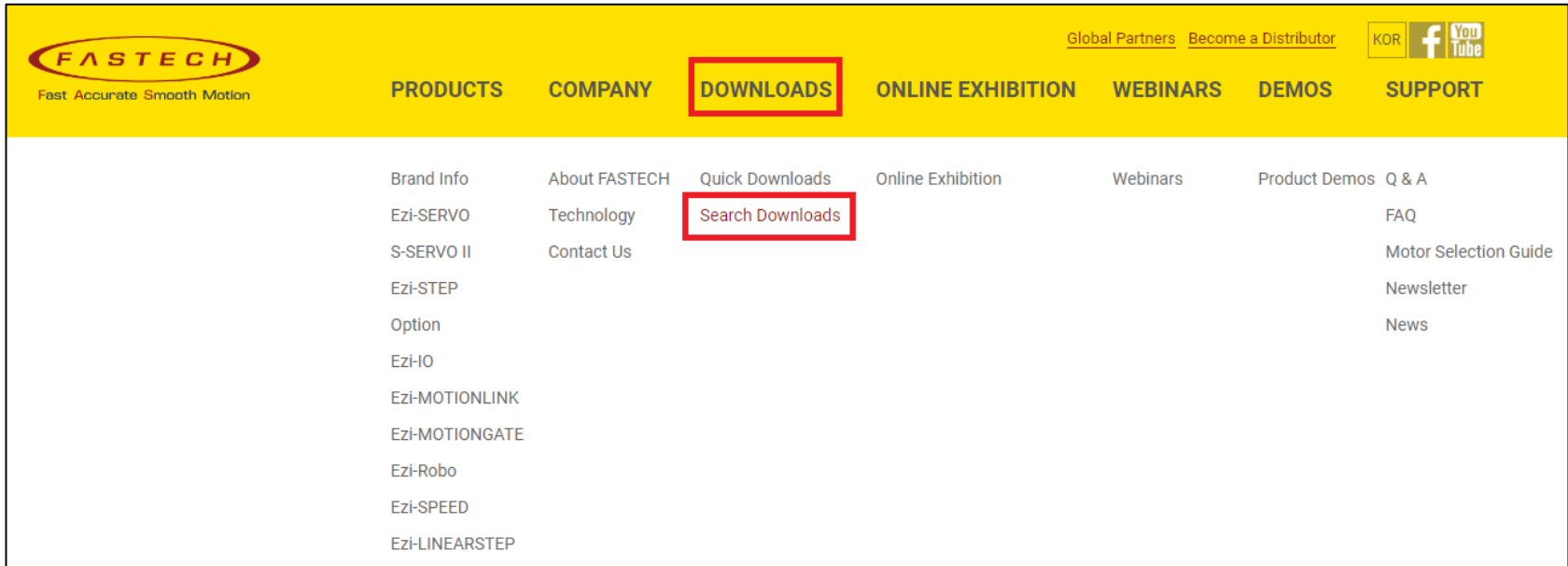
- AC Input (220V) BLDC Motor Speed Control System
- Modbus-RTU Based on RS-485 Communication
- Compact - tLight Weight - High Power - High Efficiency Brushless Motor
- Wide Speed Control Range (50~4000 r/min)
- Stable Speed Control by Vector Control (Speed Regulation within 0.2%)
- 'Torque Limit' and 'Load Holding' Functions Supported
- Various Product Line-Up (30, 60, 120, 200, 400W)

Learn More

Product Motor Guide Download FAQ Q & A


2. How to Download

2) Click 'DOWNLOADS – Search Downloads'



2. How to Download

3) Search “linux” and download RS-485 Linux Library


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'linux' Search result

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Software	[Library] Plus-R Linux Library_Ver.1.0	2024.03.21	File down	0
Software	[Library] Plus-E Linux Library_Ver.1.0	2024.03.21	File down	0

3. Linux System Setting – Serial Port

Serial Port setting required to communicate with FASTECH products.

1. Activate the Serial Port according to the OS configuration methods.

Example) For Raspberry Pi OS, set as follows

> sudo raspi-config > Interface Options > Login Shell(No) > Serial Port Enable(Yes)

2. Check the connected serial port. (Serial Port name varies depending on connection method and environment)

> ls -l /dev/tty*

```
crw-rw---- 1 root   tty      4, 64 1 3 17:17 /dev/ttyS0
crw-rw-rw- 1 root   dialout 188, 0 1 3 17:17 /dev/ttyUSB0
crw----- 1 root   root      5, 3 1 3 17:17 /dev/ttyprintk
```

3. Permission is required to use a serial port. (Choose the options below)

3-1. Use root privileges when running a program

> sudo ./test

3-2. Grant execute permission to serial port

> sudo chmod 666 /dev/ttyUSB0

3. Linux System Setting – Library Setting

The structure of the 'Include' directory containing the FASTECH library is as follows.

```
rw-r--r-- 1 fastech fastech 305 23 12:09 COMM_Define.h
rw-r--r-- 1 fastech fastech 15300 23 12:09 FAS_EziMOTIONPlusR.h
rw-r--r-- 1 fastech fastech 2753 23 12:09 FAS_EziMOTIONPlusR_V8.h
-rwxr-xr-x 1 fastech fastech 21975 23 12:09 MOTION_DEFINE.h
-rwxr-xr-x 1 fastech fastech 12804 23 12:09 MOTION_EziMotionLink2_DEFINE.h
-rwxr-xr-x 1 fastech fastech 12625 23 12:09 MOTION_EziMotionLink_DEFINE.h
-rwxr-xr-x 1 fastech fastech 12508 23 12:09 MOTION_EziSERVO2_86_DEFINE.h
-rwxr-xr-x 1 fastech fastech 12001 23 12:09 MOTION_EziSERVO2_DEFINE.h
-rwxr-xr-x 1 fastech fastech 13015 23 12:09 MOTION_EziSERVO2_TO_DEFINE.h
-rwxr-xr-x 1 fastech fastech 12854 23 12:09 MOTION_EziSERVO_ADC_DEFINE.h
-rwxr-xr-x 1 fastech fastech 9224 23 12:09 MOTION_EziSERVO_ALL_28_DEFINE.h
-rwxr-xr-x 1 fastech fastech 9342 23 12:09 MOTION_EziSERVO_ALL_28_V2_DEFINE.h
-rwxr-xr-x 1 fastech fastech 13025 23 12:09 MOTION_EziSERVO_ALL_ABS_DEFINE.h
-rwxr-xr-x 1 fastech fastech 12441 23 12:09 MOTION_EziSERVO_ALL_DEFINE.h
-rwxr-xr-x 1 fastech fastech 11851 23 12:09 MOTION_EziSERVO_DEFINE.h
-rwxr-xr-x 1 fastech fastech 12592 23 12:09 MOTION_EziSERVO_mini_DEFINE.h
-rwxr-xr-x 1 fastech fastech 11740 23 12:09 MOTION_EziSTEP2_DEFINE.h
-rwxr-xr-x 1 fastech fastech 12240 23 12:09 MOTION_EziSTEP_ALL_DEFINE.h
-rwxr-xr-x 1 fastech fastech 11655 23 12:09 MOTION_EziSTEP_DEFINE.h
-rwxr-xr-x 1 fastech fastech 12384 23 12:09 MOTION_EziSTEP_mini_DEFINE.h
-rwxr-xr-x 1 fastech fastech 11971 23 12:09 MOTION_SSERVO_DEFINE.h
-rwxr-xr-x 1 fastech fastech 8045 23 12:09 PROTOCOL_FRAME_DEFINE.h
-rwxr-xr-x 1 fastech fastech 954 23 12:09 PROTOCOL_V8_FRAME_DEFINE.h
-rwxr-xr-x 1 fastech fastech 808 23 12:09 ReturnCodes_Define.h
lrwxrwxrwx 1 fastech fastech 24 23 12:09 libEziMOTIONPlusR.so -> libEziMOTIONPlusR.so.1.0
lrwxrwxrwx 1 fastech fastech 24 23 12:09 libEziMOTIONPlusR.so.1 -> libEziMOTIONPlusR.so.1.0
-rwxr-xr-x 1 fastech fastech 1608668 23 12:09 libEziMOTIONPlusR.so.1.0
```

1. Copy the 'Include' directory to your project path.

2. Copy FASTECH shared library files and symbolic links to the Linux shared library directory.

```
sudo cp -df ./libEziMOTIONPlusR.so* /usr/local/lib
```

```
sudo ldconfig
```

4. How to Use RS-485 Library

Unlike the Windows library, the Linux library sets the Port ID during the connection. When using the API, Slaves are identified by Port ID.

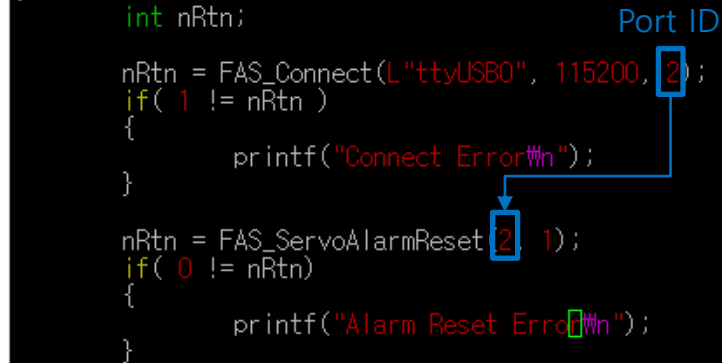
```
#include <stdlib.h>
#include <iostream>
#include <unistd.h>
#include <time.h>
#include <sys/time.h>

#include "../Include/FAS_EziMOTIONPlusR.h"

int main(void)
{
    int nRtn;

    nRtn = FAS_Connect(L"ttyUSB0", 115200, 2);
    if( 1 != nRtn )
    {
        printf("Connect Error\n");
    }

    nRtn = FAS_ServoAlarmReset(2, 1);
    if( 0 != nRtn )
    {
        printf("Alarm Reset Error\n");
    }
}
```



The diagram illustrates the use of the Port ID in the FAS library functions. A blue box highlights the value '2' in the FAS_Connect function call, with a line pointing to the label 'Port ID'. Another blue box highlights the value '2' in the FAS_ServoAlarmReset function call, with a line pointing to the same '2' in the FAS_Connect call, indicating that the Port ID is consistent across both functions.

4. How to Use RS-485 Library

1) To use the FASTECH API, you need to include FAS_EziMOTIONPlusR.h first.

```
#include <stdlib.h>
#include <iostream>
#include <unistd.h>
#include <time.h>
#include <sys/time.h>

#include "../Include/FAS_EziMOTIONPlusR.h"

int main(void)
{
    int nRtn;

    nRtn = FAS_Connect(L"ttyUSB0", 115200, 2);
    if( 1 != nRtn )
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    nRtn = FAS_ServoAlarmReset(2, 1);
    if( 0 != nRtn )
    {
        printf("Alarm Reset Error\n");
    }
}
```

2) When building a program, you need to import the FASTECH library first.

```
fastech@fastech:~/Desktop/LibPrj/PR $ g++ -o test test.cpp -IEziMOTIONPlusR
```



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