

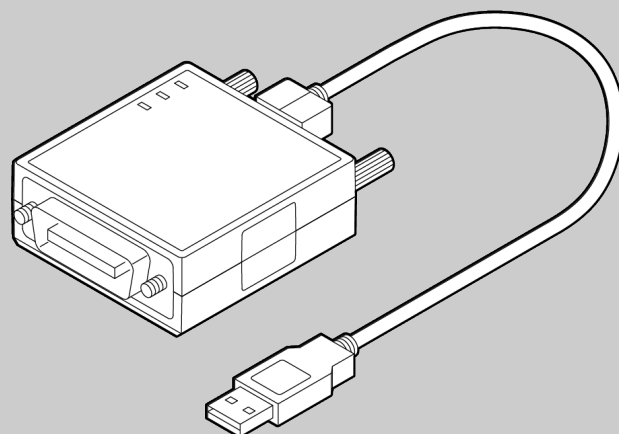
# Reference Manual

High Speed IEEE-488.2 I/F Micro Converter for USB2.0

## GPIB-FL2-USB

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# Introduction

This section provides necessary information of the product such as the outline, bundled items and manuals before actual use.

# 1. Related Manuals

The manuals related to the product are listed below.  
Read them as necessary along with this document.

## ◆ Must Read the Followings.

Name	Purpose	Contents	How to get
Setup Guide	Must read this after opening the package.	This lists the product configuration and describes the precautions.	Included in the package (Printed matter)
Reference Manual	Read this when operating the product.	This describes the hardware aspects such as functions and settings.	 Download from the CONTEC website (PDF)

## ◆ Download Manuals

Download the manuals accordingly from the following URL.

**Download** <https://www.contec.com/download/>

## 2. About the Product

This product is a micro converter that converts USB port of a PC to a GPIB communication port compatible to IEEE-488 standard.

With the USB cable (1.8 m) included in this package, it can be connected to GPIB interface of any equipment without using GPIB cables. Furthermore, this product is powered by the bus so that simple and compact GPIB communication system can be established.

According to user's needs, Windows driver and GPIB communication driver supporting LabVIEW can be downloaded from CONTEC website.

## 3.Features

### ■ Capable to communicate with GPIB communication which is compatible to IEEE-488.1/488.2 standards at 1.5 M byte/sec maximum

Capable to communicate with any equipment which is compatible to IEEE-488.1/488.2 standards with transfer rate at 1.5 Mbyte/sec maximum. Capable to set this product to whether a master (controller) or a slave.

### ■ Compatible to USB1.1/USB2.0 and bus power-driven eliminating the need for external power.

Compatible to USB1.1/USB2.0 and capable to achieve high speed transfer at HighSpeed (480 Mbps).

The product is driven by bus power from USB, which eliminates the need for external power. In addition, with the USB cable (1.8 m) included in this package, it can be connected to any equipment with GPIB interface without any GPIB cables.

### ■ Employs a buffer memory, 2 Kbytes for transmission and 2 Kbytes for reception.

Employs a buffer memory, 2 Kbytes dedicated to transmission and 2 Kbytes dedicated to reception, in order to reduce the load to the CPU when transmitting/receiving data.

### ■ Windows/LabVIEW compatible support software is offered.

The support software offered on the CONTEC website makes it possible to create applications of Windows/LabVIEW. In addition, supplies a diagnostic program to confirm hardware operation and to perform a basic communication test with connected equipment.

### ■ Employs a high speed GPIB controller developed by CONTEC and provides steady-supply

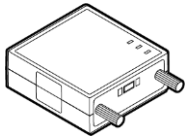
This product employs CONTEC's self-developed high speed GPIB controller ( $\mu$ PD7210 register-compatible), which provides users steady-supply with peace of mind.

### ■ Built-in SPAS event function (when slaving)

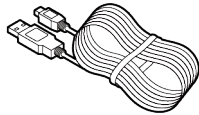
In addition to the functions of the earlier GPIB controller ( $\mu$ PD7210), the product also supports the SPAS event generated when a serial poll occurs. This gives users a high level of flexibility in constructing the system.

# 4. Product Configuration List

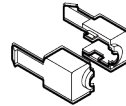
The product consists of the items listed below.  
Check, with the following list, that your package is complete.  
If you discover damaged or missing items, contact your retailer.



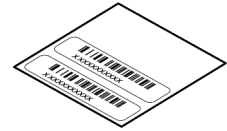
Product...1



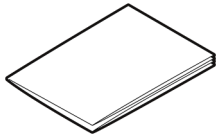
USB Cable (1.8m)...1



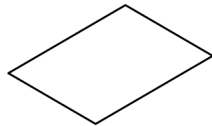
USB Cable Attachment on  
the main unit's side...1



Serial Number Label...1



Setup Guide...1



Warranty Certificate...1



# 5.Support Software

You can use CONTEC support software according to your purpose and development environment. For more details on the supported OS, applicable languages, or to download the latest version of software, visit the CONTEC’s Web site.

Name	Contents	How to get
Driver software API-GPIB(WDM) for USB	It is the driver software for Windows with new function specification and supplies command in the form of standard Win32 API function (DLL). Ideal for a user who intend to construct a new system since setting up multiple GPIB communication converters is easy, for example. In addition, sample programs such as Visual Basic and Visual C++ are included, and you can verify the operation of hardware by using Diagnostic programs.	Download from the CONTEC website
Driver software API-GPIB(98/PC)	It is the driver software, and which supplies command in the form of standard Win32 API function (DLL). In addition, sample programs such as Visual Basic and Visual C++ are included, and you can verify the operation of hardware by using Diagnostic programs.	Download from the CONTEC website
GPIB communication driver supporting LabVIEW API-GPLV(W32)	API-GPLV(W32) is a driver created according to the National Instruments Corporation’s GPIB function style. The driver is software to control the CONTEC GPIB board using a LabVIEW-based GPIB system or existing application program.	Download from the CONTEC website

Download the files accordingly from the following URL.

**Download** <https://www.contec.com/download/>

# 6. Optional Products

Optional product items are as follows:  
Use these items with the main unit as necessary.

Product Name	Model type	Description
GPIB cable	PCN-T02	GPIB cable (2m)
	PCN-T04	GPIB cable (4m)
GPIB connector adapter	CN-GP/C	GPIB connector adapter  Effective if this product interferes with the main unit of the target device when plugging this product into the device.

Visit the CONTEC website for the latest optional products.

**Website** <https://www.contec.com/>

# Safety Precautions




Understand the following definitions and precautions to use the product safely.

Never fail to read them before using the product.

# 1. Safety Information

This document provides safety information using the following symbols to prevent accidents resulting in injury or death and the destruction of equipment and resources.

Understand the meanings of these labels to operate the equipment safely.

 <b>DANGER</b>	Signal word used to indicate an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 <b>WARNING</b>	Signal word used to indicate a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 <b>CAUTION</b>	Signal word used to indicate a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

## 2. Handling Precautions

### **DANGER**

- Do not use the product in locations exposed to a flammable or corrosive gas. It may cause explosion, fire, electrical shock, or malfunction.

### **CAUTION**

- Do not strike or bend this product.  
Otherwise, this product may malfunction, overheat, cause a failure or breakage.
- Make sure that your PC can supply ample power to all this product installed.  
Insufficiently energized products could malfunction, overheat, or cause a failure.
- It may cause a trouble in recognizing and operating the device according to the kind of USB hub.
- As this product contains precision electronic components, do not use or store it in the environments subject to shock or vibration. Otherwise the product may malfunction, overheat, cause a failure or breakage.
- Do not use or store the product in a hot or cold place where the temperature exceeds the specified range, or in a place that is subject to severe temperature changes.  
Otherwise the product may malfunction, overheat, cause a failure or breakage
- Do not use or store the product in a place subject to direct sunlight or near a heating device, such as a stove. Otherwise the product may malfunction, overheat, cause a failure or breakage.
- Do not use or store the product near equipment generating a strong magnetic field or radio waves. Otherwise the product may malfunction, overheat, cause a failure or breakage.
- Do not touch this product's terminals (USB connector, Interface connector) with your hand.  
Otherwise, the product may malfunction, overheat, or cause a failure.  
If the terminals are touched by someone's hands, clean the terminals with industrial alcohol.
- Do not touch the interface connector when the power is on.  
Otherwise the product may malfunction, overheat, cause a failure due to static electricity.
- Do not plug or unplug the internet connector when the power is on. This may cause a failure.
- Do not operate switches when the power is on. This may cause a failure.
- When connecting multiple units, set one unit at a time. Complete the setup before starting to connect the next unit.
- The specifications of this product are subject to change without notice for enhancement and quality improvement.  
Even when using the product continuously, be sure to read the manual and understand the contents.
- Do not modify or disassemble the product. CONTEC will bear no responsibility for any problems, etc., resulting from modifying or disassembling the product.

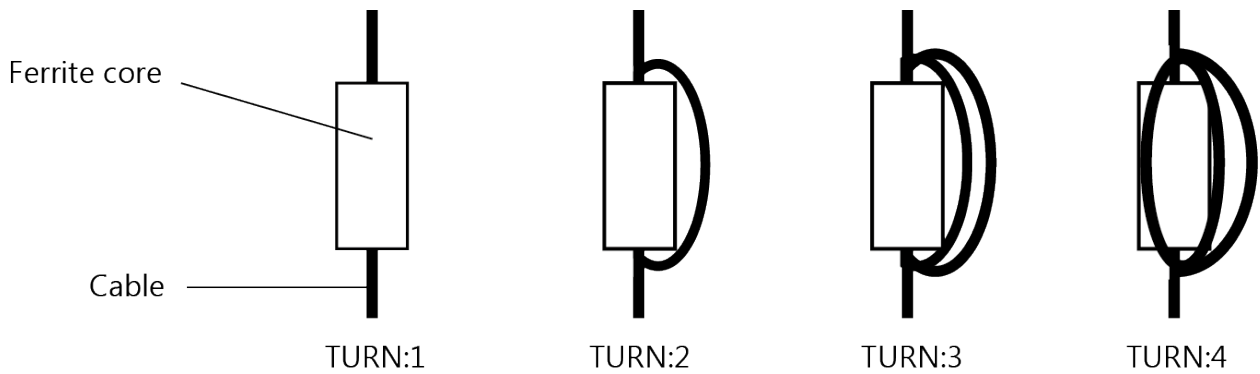
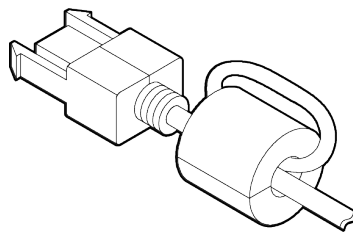
- The product must always be accompanied by the Setup Guide when transferred or assigned.
  - Contact your retailer for product repair or replacement.
  - When disposing of the product, follow the disposal procedures stipulated under the relevant laws and municipal ordinances.
  - Regardless of the foregoing statements, CONTEC is not liable for any damages whatsoever (Including damages for loss of business profits) arising out of the use or inability to use this CONTEC product or the information contained herein.
-

# 1. Regarding “CE EMC Directive Class A Notice”

The ferrite core must be installed in the connecting cable so that this product may suit the above-mentioned standard. (Equivalent product can also be used)

Name	Maker	Turn	Quantity	Installation Site
RFC-13MA	KITAKAWA INDUSTRIES	4	1	on USB cable at product side
RFC-20	KITAKAWA INDUSTRIES	2	1	on GPIB cable at pc side

Image diagram



## 2. FCC PART15 Subpart B Class A

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NOTE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## 3. EN55032 Class A Notice

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Warning:

Operation of this equipment in a residential environment could cause radio interference.



## 3.Environment

Use this product in the following environment. If used in an unauthorized environment, this product may overheat, malfunction, or cause a failure.

### Operating temperature

0 - 50°C

### Humidity

10 - 90%RH (No condensation)

### Corrosive gases

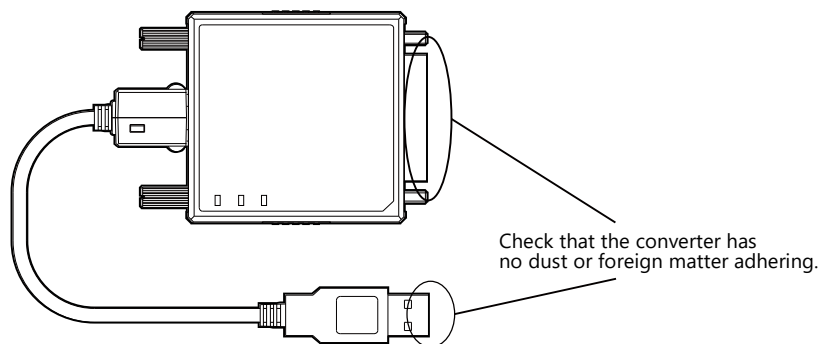
None

### Floating dust particles

Not to be excessive

## 4.Inspection

Inspect the product periodically as follows to use it safely.



## 5.Storage

When storing this product, keep it in its original packing form.

- Put this product in the storage bag.
- Wrap it in the packing material, and then put it in the box.
- Store the package at room temperature at a place free from direct sunlight, moisture, shock, vibration, magnetism, and static electricity.

## 6. Disposal

When disposing of the product, follow the disposal procedures stipulated under the relevant laws and municipal ordinances.

# Setup

This section explains how to set up this product.

# 1. What is Setup?

Setup means a series of steps to take before the product can be used.

Different steps are required for driver software and hardware.

The setup procedure varies with the OS or driver software used.

## 1. Driver Software Installation

This section describes the procedure to start the application program development using the driver software API-GPIB (WDM) for USB.

Taking the following steps sets up the driver software and hardware. You can use the diagnosis program later on to check whether the driver software and hardware function properly.

- Step 1 Driver Software Installation (page21)**
- Step 2 Hardware Setting (page22)**
- Step 3 Hardware Installation (page26)**
- Step 4 Driver Software Initialization (page28)**
- Step 5 Operation Check (page30)**

If Setup fails to be performed properly, see the **“Setup Troubleshooting (page34)”** section at the end of this chapter.

## 2. Driver Software Installation

This section describes how to install the driver software.

Before connecting this product to a PC, install the device driver.

Although some user interfaces are different depending on the OS used, the basic procedure is the same. For detailed OS installation procedure, refer to Help (APIUSBP.chm) in the folder that installed the development environment package from CONTEC website.

### 1. Starting Up the Install Program

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- 1** Download the API-GPIB(WDM) for USB from CONTEC website.
- 2** Expand the downloaded file.
- 3** Execute the installer in the expanded folder.

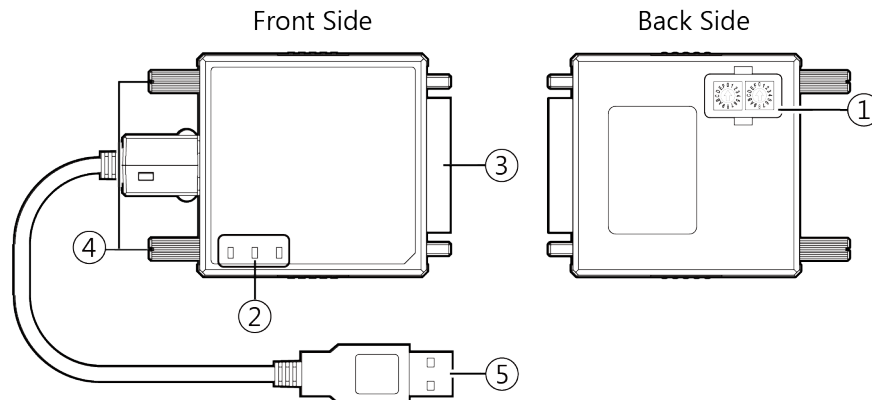
(Expanded folder)\INF\WDM\GPIB\_forWin10\Setup.exe

## 3. Hardware Setting

This section describes how to set up the product and how to connect it to a PC.

### 1. Nomenclature of Product Components

Component names of the product are shown in the figure below.

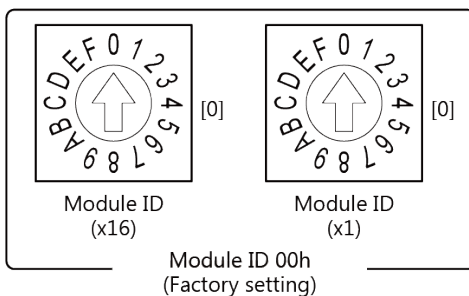


No.	Name	Description
1	Setting Switches	These are switches to distinguish modules.
2	LED Indicator	This indicates the state of the product.
3	Interface Connector	This is a 24-pin GPIB connector (Male)
4	Connecting Screws	These are screws to connect GPIB cable or a remote device.
5	USB Connector	This is a USB connector for type-A.

## 2. Setting Switches

With the two setting switches, the host computer distinguishes and keeps track of the devices of same model by assigning Module IDs to them. Factory setting "00" can be used when only one device per model is connected to one computer. Each device should be assigned a unique Module ID in the range of 00 - 7Fh when several devices with the same model are being connected.

"x16" and "x1" represent high bits and low bits of Module ID respectively.



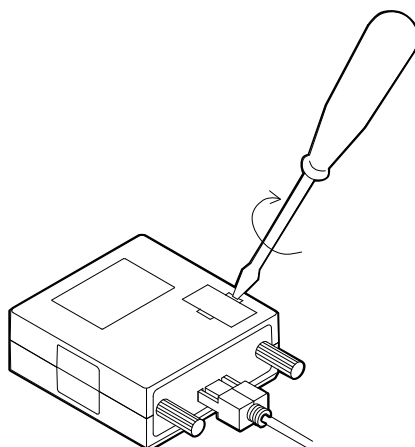
Module ID	Description
00 - 7Fh	It is a setting range for module IDs.
FFh	This is used only when upgrading the firmware.

### ⚠ CAUTION

When setting with Module ID(x1) = F, Module ID(x16) = F, Module ID is only used for upgrading the firmware. This setting cannot be used to distinguish or keep tracks of the devices.

#### How to open the cover

Use a flathead screwdriver or similar to open the cover on the underside of the product. This exposes the setting switches to set the Module ID. As shown in Figure below, an easy way to open the cover is to insert the tip of the screwdriver into the slot and then rotate the screwdriver.



### 3. LED Indicator

The product indicates its operation state by means of light emitting diodes.  
 The LED indicates as listed below.

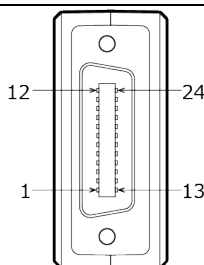


List of Status LED Functions

LED	Function	Color	Display		Description
LA	Status of address	Yellow	ON		Listener mode
			OFF		Not listener mode
SRQ	Output status of SRQ signal	Yellow	ON		SRQ output (Low)
			OFF		No SRQ output (High)
LINK	USB communication status	Green	ON		Communication is established.
			OFF		Communication is not established.
	PC connection status	Green	ON		PC communication is established.
			OFF		PC communication is not established.

### 4. Interface Connector

Use the 24-pin connector attached to this product to connect to a remote device.



Compatible connector (cable): GPIB cable (IEEE-488 standard follow)

Pin number	Signal name	Pin number	Signal name
12	GND (Shield)	24	GND (Logic)
11	ATN (Attention)	23	GND (Grand)
10	SRQ (Service Request)	22	GND (Grand)
9	IFC (Interface Clear)	21	GND (Grand)
8	NDAC (Not Data Accepted)	20	GND (Grand)
7	NRFD (Not Ready for Data)	19	GND (Grand)
6	DAV (Data Valid)	18	GND (Grand)
5	EOI (End Of Identify)	17	REN (Remote Enable)
4	DIO4	16	DIO8
3	DIO3	15	DIO7
2	DIO2	14	DIO6
1	DIO1	13	DIO5



## 5. Connecting Screws

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These are screws to connect GPIB cable or a remote device.

## 6. USB Connector

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This is a USB connector for type-A. Connect this to the USB port on the PC side.

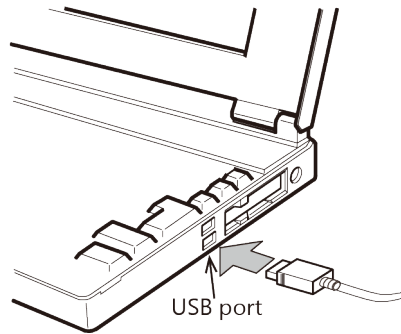
## 4. Hardware Installation

Under Windows, the peripherals need to be recognized by the OS. This is called hardware installation. **When using multiple converters, install one at a time. Complete the setup of the converter before starting to install the next one.**

### 1. Connecting the Product

- 1 Turn on the power to the PC before connecting this product.
- 2 When the PC has been up and running, connect the product to a USB port in the PC.

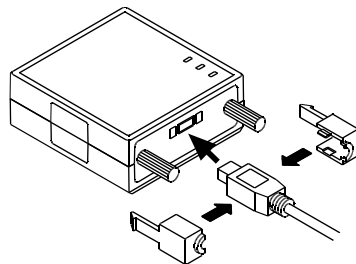
**Connect the product to a USB port in the PC.**



#### CAUTION

It may cause a trouble in recognizing and operating the device according to the kind of USB hub.

#### Attaching a USB Cable Attachment



\* USB cable can be attached firmly to the converter by using a USB cable attachment.

#### CAUTION

- The USB cable attachment cannot be used excluding a bundled cable.
- When the USB cable attachment is being used, do not remove or connect the USB cable on the converter side repeatedly. This may damage the USB cable attachment or yourself.

- 3** The hardware is automatically recognized by the OS and installation proceeds automatically.
- 4** You have now finished installing the hardware.

# 5. Driver Software Initialization

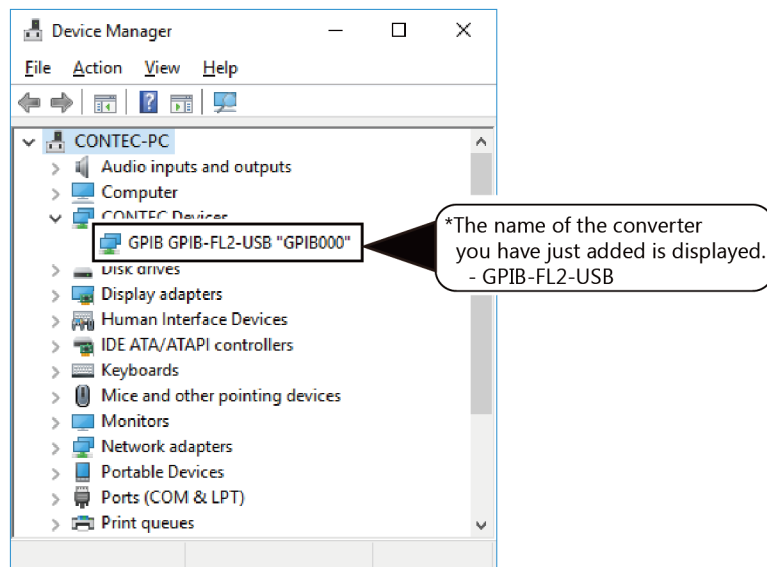
Setting the device name is required to use the driver software. It is called the driver software initialization.

The device name will be assigned automatically during hardware installation. Therefore, if you want to use it, you can skip the setting procedure described below. To change the device name, follow the setting procedure described below.

## 1. Setting the device name

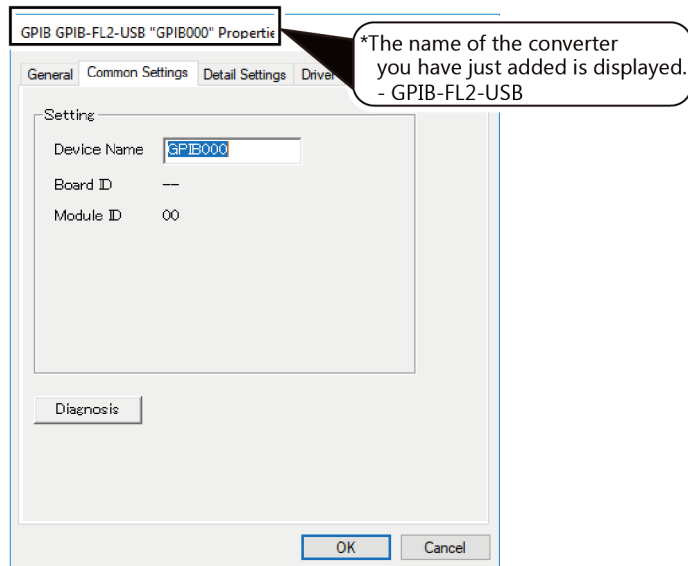
### 1 Run Device Manager.

Right-click on the Windows mark (start button) on the lower left side of the screen, and then select the [Device Manager] from the displayed menu.



- ### 2
- The installed hardware appears under the CONTEC Devices node. Open the CONTEC Devices node and select the device you want to setup. Click the [Properties].

- 3** The property page for the device opens.  
Enter the device name in the Common Settings tab page and then click the [OK].  
The device name you set here is used later when programming.



- \* The initial device name that appears is a default value. You can use this default name if you wish.
- \* Make sure that you do not use the same name for more than one device.
- \* For module IDs, the values of the setting switches are displayed.

- 4** You have now finished initializing the driver software.

## 6. Operation Check

You must make sure that this product and driver software operate properly. By taking this step, you can be certain that this product has been set up appropriately.

### 1. Check Method

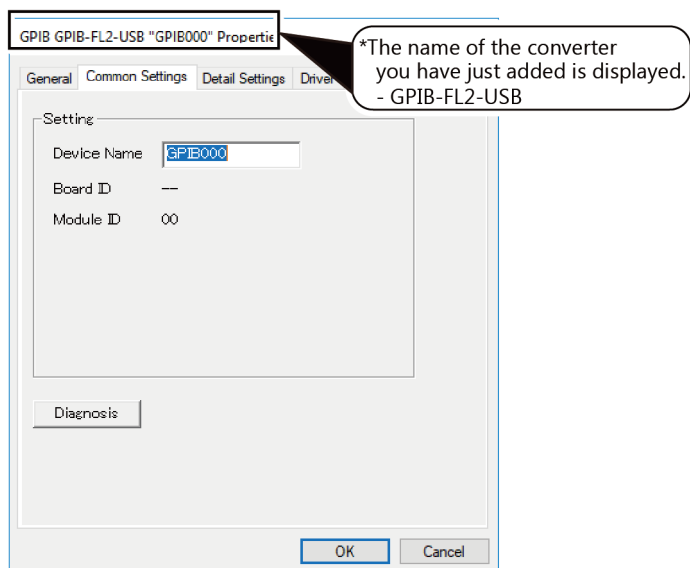
Connect the product to an external target device to test the communication and check the execution environment.

To connect an external target device, see **"Connecting to an External Device"** (page36).

### 2. Using the Diagnosis Program

#### ◆ Starting the Diagnosis Program

Click the [Diagnosis] on the Properties page to start the diagnosis program.



## ◆ Checking Functions

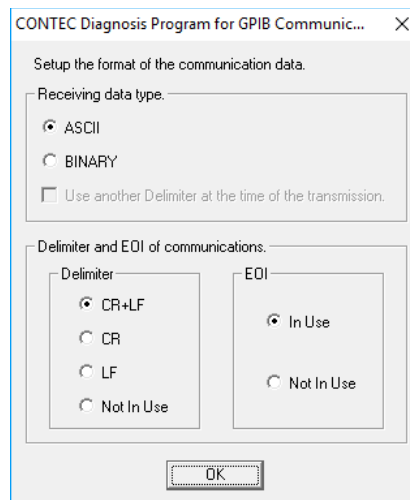
After the address and communication data format of the target device are set, the main dialog box of the Diagnosis Program appears.

You can check the current operation states of the board in the following boxes:

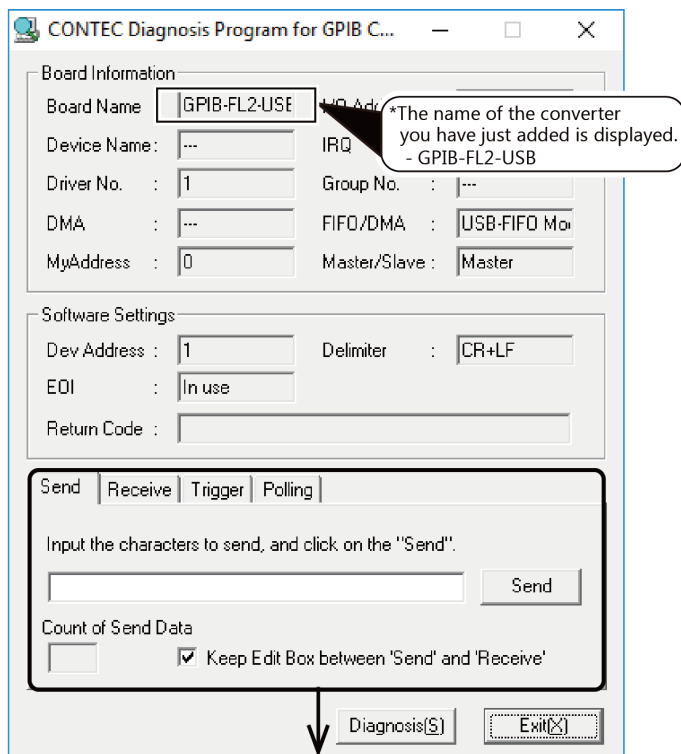
- 1 Specify the remote device address and click on the [OK] button.



- 2 Specify the communication data format and click on the [OK] button.



### 3 The main dialog box appears.



The following commands can be used to check operations.

- “Send”: Sends the typed character string to the remote device.
- “Receive”: Receives data from the target device and displays it along with the number of data items.
- “Trigger”: Sends a trigger command to the remote device.
- “Polling”: Polls the remote device and displays the obtained status byte.

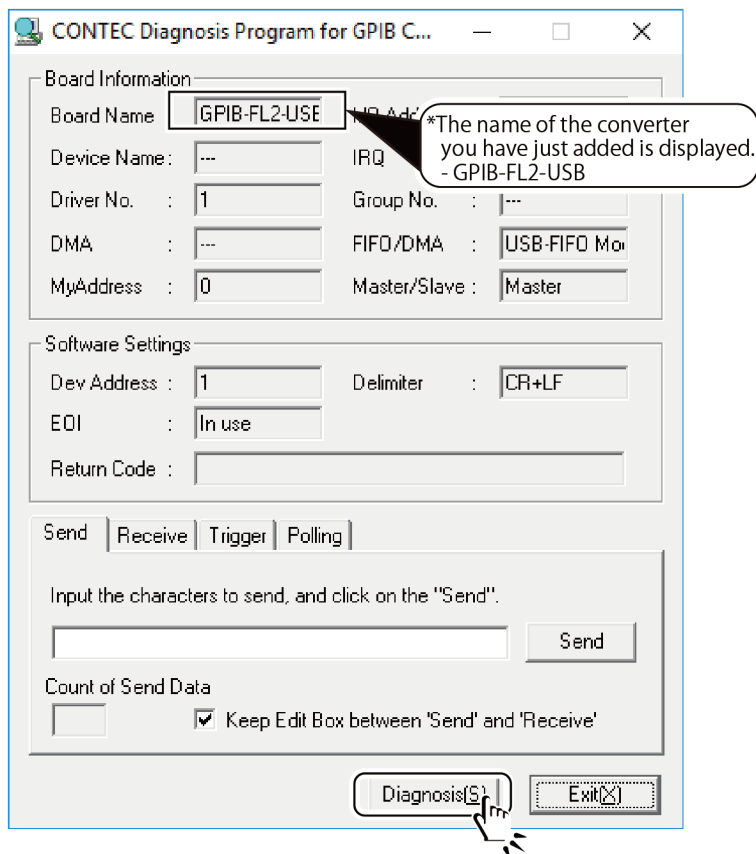
#### \*Note

When communication has been completed successfully, “xxxxx completed normally” is displayed as the “return value”.

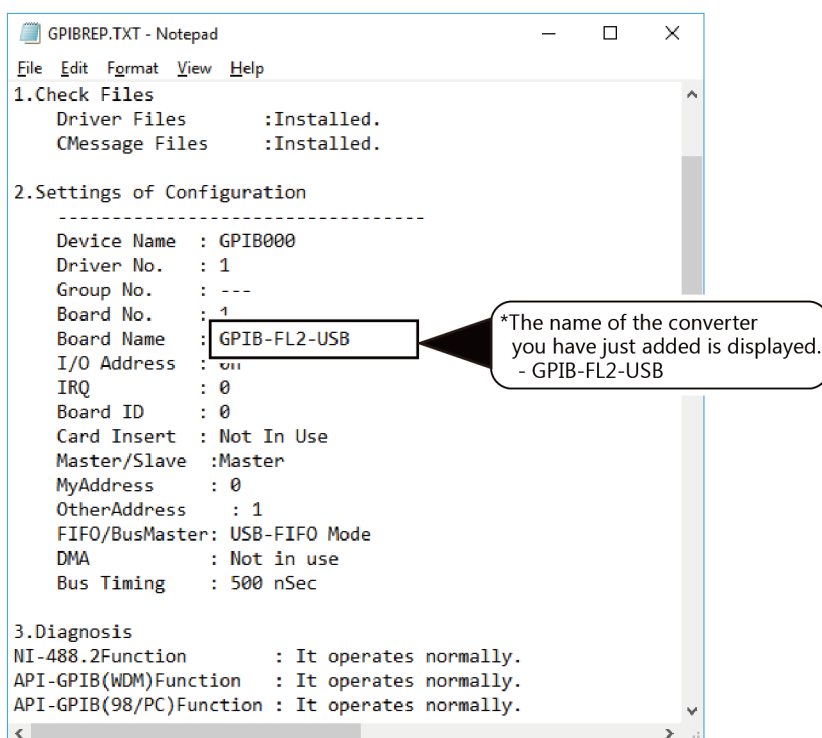


## ◆ Diagnosis Report

- 1 Clicking on [Diagnosis] displays detailed data including converter settings and the diagnosis results while saving them in text format. The diagnosis program performs "driver file test", "GPIB communication test", "device setting information obtain" and so on.



- 2 A diagnosis report is displayed as shown below.



# 7.Setup Troubleshooting

## 1. Examples and Solution

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### ◆ The diagnostic program works properly but the application program does not.

The diagnostic program uses the API-GPIB(WDM) for USB functions. If the diagnostic program works properly, other applications should also work properly. If you have a problem, recheck your program taking note of the following points.

- Check the return values of the API functions.
- Refer to the source code for the sample programs.

### ◆ If your problem cannot be resolved

Contact your retailer.

# Connecting to an External Device

This section describes how to connect the product to an external device with a cable.

# 1. Connecting to an External Device

## 1. Notes on GPIB cable connection

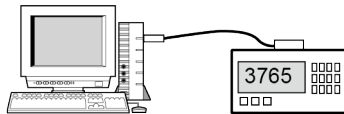
The GPIB has restrictions on the number of devices connected and the cable length according to the standard.

- 1** The maximum number of interfaces (external devices) is 15, which can be connected to one system.
- 2** The maximum total length of cables that can be used to interconnect a group of devices in one bus system is "2 m x (the number of devices)" or 20 m, whichever is shorter. (JIS C1901-1987)  
Note, however, the individual cables between devices must be within 4 m long.  
Some examples are given below.

- **System with a total of two devices**

$2 \text{ m} \times (\text{Number of devices} = 2) < 20 \text{ m}$

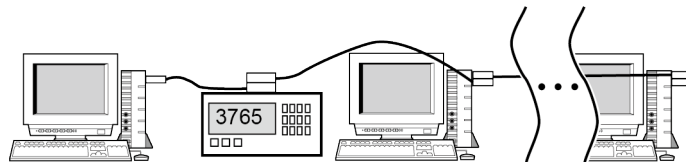
The maximum total length of cables for this system is therefore 4 m.



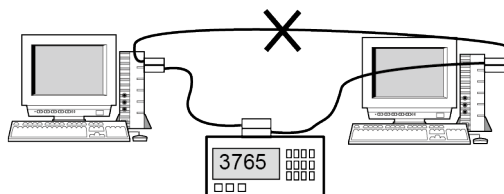
- **System with a total of three devices**

$2 \text{ m} \times (\text{Number of devices} = 3) < 20 \text{ m}$

The maximum total length of cables for this system is therefore 6 m. The two cables used in the system must be [2 m + 4 m] or [2 m + 2 m] in length so that neither is longer than 4 m.



- 3** The cables in the system must not form a loop.



- 4** Unplug the cable from any device which is left off for some reason such as a fault.
- 5** When powering the measurement system, turn on the measuring instrument first and then on the PC.
- 6** Neither unplug/plug the cable nor turn on/off the device during communication. Doing so stops the operation or causes an error, resulting in trouble.
- 7** The talker and listener must be addressed to talk and to listen, respectively, by the controller before the talker can send messages to the listener.
- 8** At least two-thirds of all the devices connected must be turned on.

# Software

This section describes GPIB communication driver for Windows developed by CONTEC and CONTEC Device Utility.

# 1. Application Development

The driver software listed below is provided for application development. The following sections describe each and the main programming languages that can be used.

## **API-GPIB(WDM) for USB**

It is the driver software for Windows with new function specification and supplies command in the form of standard Win32 API function (DLL). Settings of multiple GPIB communication converters can be done easily, therefore, install this software if you are developing a new application or are an existing user of the "GPIB Development Environment of API-USBP(WDM).

## **API-GPIB(98/PC)**

It is the driver software, and which supplies command in the form of standard Win32 API function (DLL).

In addition, sample programs such as Visual Basic and Visual C++ are included, and you can verify the operation of hardware using Diagnostic programs.

## **API-GPLV(W32)**

API-GPLV(W32) is a driver created according to the National Instruments Corporation's GPIB function style. The driver is software to control the CONTEC GPIB board using a LabVIEW-based GPIB system or existing application program.

## 2. For using API-GPIB(WDM) for USB

When using the driver software API-GPIB(WDM) for USB for development, please refer to the online help and sample programs.

### 1. Accessing the Help File

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It might be slightly different depending on the installed driver (development environment) version. From [Start] menu, click on [CONTEC API-USBP(WDM)]-[API-USBP(W32) Help] to display help information.

The information for application development, such as function reference is provided in [API-USBP(WDM) Help]. Detailed introduction to search method for help should be found from [How to navigate Help] in the help. Refer to the [Tutorial] in the help for basic usage.

### 2. Using Sample Programs

---

Sample programs are individually offered for the basic application.

The sample programs of the API-GPIB(WDM) for USB can be found in

\Program Files (x86)\CONTEC\API-USBP(WDM)\Gpib\Samples

or

\Program Files\CONTEC\API-USBP(WDM)\Gpib\Samples .

Use these sample programs as references for program development and operation check.

\* The sample program folder differs if you changed the install folder.

### 3. Running a Sample Program

---

From the Start Menu on the Windows taskbar, go to "Programs" – "CONTEC API-GPIB(WDM) for API-USBP(WDM)" and select the sample programs.

#### ◆ Sample Programs - Examples

- Master  
Executes a series of operations including transmit/receive, polling, and sending commands in master mode.
- Slave  
Executes a series of operations including transmit/receive, SRQ send, and response to parallel polling in slave mode.



## 4. Uninstalling the Driver Software

---

Refer to the help file for detailed uninstalling procedure per OS.

### ◆ Uninstall of Device Driver

Refer to "**Uninstall of Device Driver**" (page46).

### ◆ Uninstall of Development Environment

Use [Control Panel] - [Programs and Features] to uninstall the development environment.  
Select [CONTEC API-USBP(WDM) GPIB Communication Develop] and then click [Uninstall].

## 3. For using API-GPIB(98/PC)

When using the driver software API-GPIB(98/PC) for development, please refer to the online help and sample programs.

### 1. Accessing the Help File

---

It might be slightly different depending on the installed driver (development environment) version. From [Start] menu, click on [CONTEC API-GPIB(98/PC) for API-PAC(W32)] – [API-GPIB HELP].

The information for application development, such as function reference is provided in [API-USBP(WDM) Help]. Refer to the [Tutorial] in the help for basic usage.

### 2. Using Sample Programs

---

Sample programs are individually offered for the basic application.

The sample programs of the API-GPIB(98/PC) can be found in

\Program Files (x86)\CONTEC\API-PAC(W32)\GPIB\Samples

or

\Program Files\CONTEC\API-PAC(W32)\GPIB\Samples.

Use these sample programs as references for program development and operation check.

\* The sample program folder differs if you changed the install folder.

### 3. Running a Sample Program

---

From the Start Menu on the Windows taskbar, go to "Programs" – "CONTEC API-GPIB(98/PC) for API-PAC(W32)" and select the sample programs.

#### ◆ Sample Programs - Examples

- Master  
Executes a series of operations including transmit/receive and polling in master mode.
- Slave  
Executes a series of operations including transmit/receive and SRQ send in slave mode.

## 4. Uninstalling the Driver Software

---

Refer to the help file for detailed uninstalling procedure per OS.

### ◆ Uninstall of Device Driver

Refer to "**Uninstall of Device Driver**" (page46).

### ◆ Uninstall of Runtime Environment

Use [Control Panel] - [Programs and Features] to uninstall the development environment.  
Select [CONTEC API-GPIB(98/PC)NT VerX.XX (Runtime)] and then click [Uninstall].

### ◆ Uninstall of Development Environment

Use [Control Panel] - [Programs and Features] to uninstall the development environment.  
Select [CONTEC API-GPIB(98/PC)NT VerX.XX (Develop)] and then click [Uninstall].

## 4. For using API-GPLV(W32)

API-GPLV(W32) is a driver software created in NI's GPIB function style as the software for controlling CONTEC GPIB products.

When the driver software is installed, existing applications such as LabVIEW can operate CONTEC GPIB products. For details, refer to the help file.

### 1. Accessing the Help File

---

It might be slightly different depending on the installed driver (development environment) version. From [Start] menu, click on [CONTEC API-GPLV(W32) for API-PAC(W32)] – [API-GPLV HELP] to display help information.

The help file provides information such as "operation specifications", "additional information", and "troubleshooting".

### 2. Using Sample Programs

---

Sample programs are individually offered for the basic application.

The sample programs of the API-GPLV(W32) can be found in

\Program Files (x86)\CONTEC\API-PAC(W32)\ Gplv \Samples

or

\Program Files\CONTEC\API-PAC(W32)\ Gplv \Samples.

Use these sample programs as references for program development and operation check.

\* The sample program folder differs if you changed the install folder.

### 3. Running a Sample Program

---

From the Start Menu on the Windows taskbar, go to "Programs" – "CONTEC API-GPLV(W32) for API-PAC(W32)" and select the sample programs.

#### ◆ Sample Programs - Examples

- GpibTest  
Executes a series of operations including initialization, transmit/receive, and polling.

## 4. Uninstalling Driver Software

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Refer to the help file for detailed uninstalling procedure per OS.

### ◆ Uninstall of Device Driver

Refer to "**Uninstall of Device Driver**" (page46).

### ◆ Uninstall of Runtime Environment

Use [Control Panel] - [Programs and Features] to uninstall the runtime environment.

Select [CONTEC API- GPLV(W32) VerX.XX (Runtime)] and then click [Uninstall].

### ◆ Uninstall of Development Environment

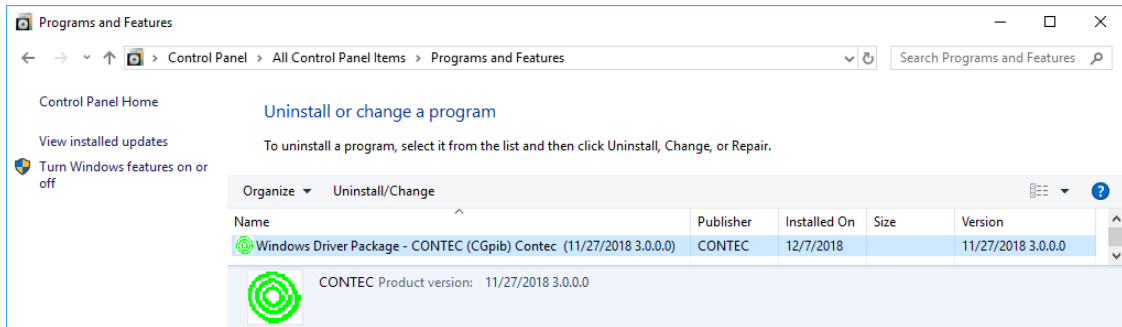
Use [Control Panel] - [Programs and Features] to uninstall the development environment.

Select [CONTEC API- GPLV(W32) VerX.XX (Develop)] and then click [Uninstall].

## 5. Uninstall of Device Driver

Refer to the help file for detailed uninstalling procedure per OS.

Use [Control Panel] - [Programs and Features] to uninstall the development environment.



Select [Windows driver package - CONTEC (CGpib) Contec] and then click [Uninstall/Change].

After the uninstallation described above has been completed, select [CONTEC API-GPIB(WDM) driver] and then click [Uninstall].

## 6. CONTEC Device Utility

CONTEC Device Utility is utility software to setup the CONTEC's measuring control device. Use this software to update firmware of the product.

### 1. Updating Firmware

Firmware is namely software which is embedded in the product. Up-to-date firmware (update file) will be supplied in the CONTEC website when function upgrades and so on.

The following presents how to update firmware.

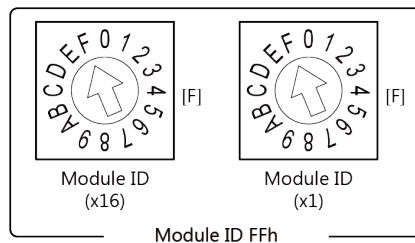
#### 1 Preparation for updating

Unplug and remove all of USB cables and interface connectors from the product once.

When using more than one converter, always connect each of them with a USB cable, and complete updating before starting to update the next product.

Set Module ID of this product to FFh.

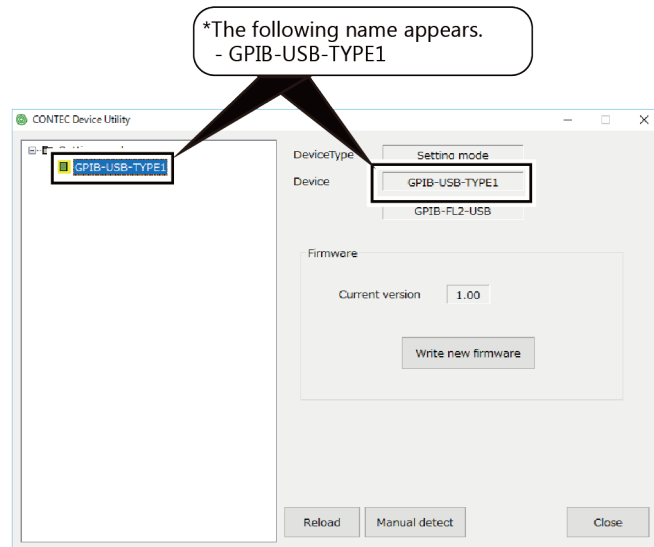
This setting is specifically used for firmware updating.



#### 2 Connect the product to USB port.

Connect the converter to USB port of the PC.

- 3** Start up the Utility.  
Start up CONTEC Device Utility.  
(The utility can be found in Utility folder of API-GPIB(WDM) for USB driver.)



- 4** Write firmware  
Select GPIB-USB-TYPE1 from the list, and perform updating firmware.
- 5** Remove the product.  
Remove the product from USB port of the PC.
- 6** Set Module ID back to the former ID.  
Set Module ID back to the ID that had been set before firmware was updated.



# Functions

This section describes the features achieved by combining hardware and driver functions.

# 1. Basic GPIB Function

## ◆ Master/Slave function

The converter can be used as either the master (controller) or slave, depending on a setting in the property page.

When used as the master, the converter can send IFC (Interface Clear) at any timing and control the REN (Remote Enable) line.

## ◆ Communication function

The converter can send and receive data in accordance with the IEEE 488 Standard. You can add delimiters and EOI (End Of Identify) to outgoing data depending on the software settings.

## ◆ Serial poll/parallel poll/SRQ send functions

The following functions can be used depending on the master/slave configuration.

### Master

- Serial poll
- Parallel poll

### Slave

- Status byte setting
- SRQ (Service Request) transmission
- Response to parallel polling

## My address setting

The GPIB address (my address) of the converter can be set in Property page.

No setting is required on the converter.

## 2. Additional Functions

### **Communication using FIFO memory**

The product can use FIFO memory for communication. As the product controls this form of communication, it can be performed at high speed irrelevant to the PC's CPU speed.

Note, however, that the actual communication speed is set to the speed of the slowest device in compliance with the GPIB standard.

# Appendix

This section lists the specifications and the physical dimensions of the product.

# 1. Hardware Specification

## Function Specifications

Item		Specification
GPIB	The number of channels	1 channel Conforms to IEEE-488.1, 488.2(GPIB)standards
	Transfer format	8-bit parallel, 3-wire handshake system
	Transfer rate	1.5Mbyte/sec
	Data buffer size	2Kbyte send, 2Kbyte receive
	Signal logic	Negative logic L level : 0.8V or less, H level : 2.0V or more
	Cable length between devices	4m or less *1
	Total cable length	20m or less
	Connectable number of devices	15 devices (Max.)
USB	Bus specification	USB Specification 2.0/1.1 standard
	USB transfer rate	12Mbps (Full-speed), 480Mbps (High-speed) *2
	Cable length	1.8m
	Power supply	Bus power
Common	Current consumption	5VDC 400mA (Max.)
	Physical dimensions (mm)	62(W) x 64(D) x 24(H) (No projection included)
	Weight	100g (Not including the USB cable, attachment)

\*1 For details, see "Notes on cable connection".

\*2 Depends on the environment of the host PC (OS, USB host controller) being used.

## Installation Environment Requirements

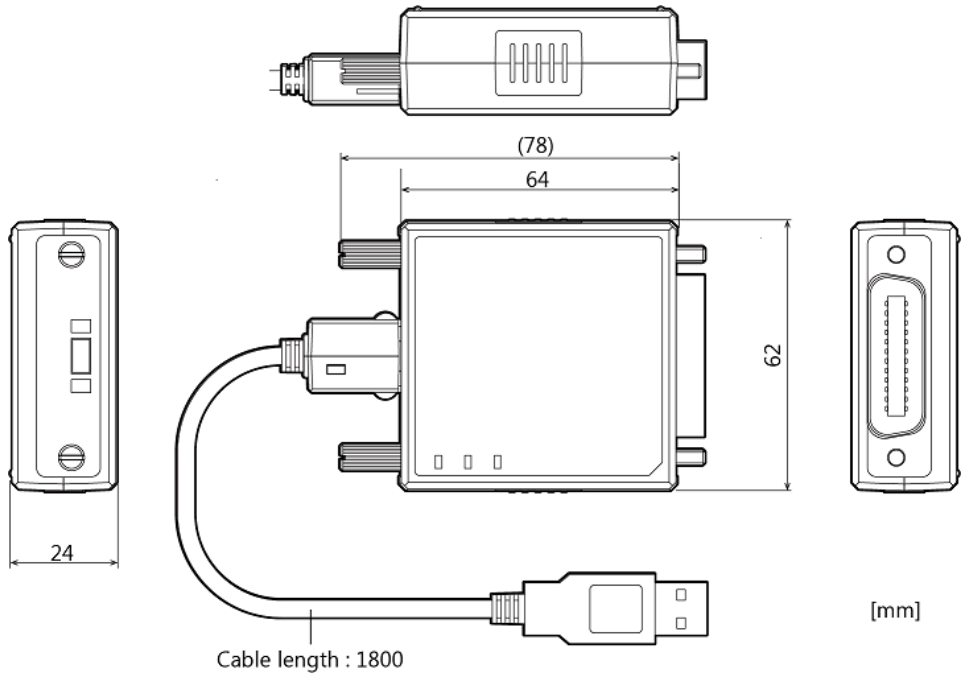
Item		Specification
Operating ambient temperature		0 - 50°C
Operating ambient humidity		10 - 90%RH (No condensation)
Floating dust particles		Not to be excessive
Corrosive gases		None
Line-noise Resistance	Line noise	AC Line/±2kV Signal Line/±1kV (IEC61000-4-4 Level 3, EN61000-4-4 Level 3)
	Static electricity resistance	Touch/±4kV (IEC61000-4-2 Level 2, EN61000-4-2 Level 2) Air/±8kV (IEC61000-4-2 Level 3, EN61000-4-2 Level 3)
Vibration resistance	Sweep resistance	40minutes each in X, Y, and Z directions (JIS C60068-2-6-compliant, IEC60068-2-6-compliant)
Shock resistance		147m/s <sup>2</sup> (15G) half-sine shock for 11ms JIS C60068-2-27-compliant, IEC60068-2-27-compliant)
Standard		VCCI Class A, FCC Class A, CE Marking (EMC Directive Class A, RoHS Directive)

## IEEE-488.1, IEEE-488.2(GPIB) standard complied

### The list of support functions

Code	Function
SH1	Source handshake functions
AH1	Acceptor handshake functions
T6	Basic talker, serial polling, MLA talker release
L4	Basic listener MTA listener release
TE0	No extended talker functions
LE0	No extended listener functions
SR1	Service request function
RL1	Remote function
DC1	Device clear function
DT1	Device trigger function
PP1	Configuration by remote message
C1	System controller function
C2	IFC send
C3	REN send
C4	Response to SRQ
C26	Interface message send, parallel polling

# 2. Physical Dimensions



## 3. Differences between GPIB-FL2-USB and GP-IB(USB)FL

Applications developed with GP-IB(USB)FL can be used in GPIB-FL2-USB as the GPIB-FL2-USB is API-compatible with the GP-IB(USB)FL.

Some differences between the two are listed below, however, there are no changes in the electrical specifications.

	<b>GP-IB(USB)FL</b>	<b>GPIB-FL2-USB</b>
Data Transfer Mode	INT, FIFO	FIFO
Current Consumption	450mA	400mA
Weight	110g (Not including the USB cable, attachment)	100g (Not including the USB cable, attachment)



# Customer Support and Inquiry

CONTEC provides the following support services for you to use CONTEC products more efficiently and comfortably.

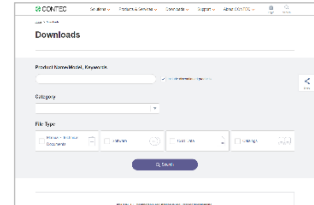
# 1.Services

CONTEC offers the useful information including product manuals that can be downloaded through the CONTEC website.

## Download

<https://www.contec.com/download/>

You can download updated driver software, firmware, and differential manuals in several languages. Membership registration (myCONTEC) is required to use the services.



# Revision History

MONTH YEAR	Summary of Changes
January 2019	The First Edition

**CONTEC CO., LTD.** 3-9-31, Himesato, Nishiyodogawa-ku, Osaka 555-0025, Japan

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<https://www.contec.com/>

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GPIB-FL2-USB Reference Manual

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