PC-HELPER Series

Reference Manual

No-Isolated RS-232C Micro Converter for USB 2.0

COM-1(USB)H
COM-1C2-USB

Isolated RS-232C Micro Converter for USB 2.0

COM-1P(USB)H
COM-1P2-USB

CONTENTS

CONTEC CO., LTD.

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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
Please read the following	Must read this after opening the package.	This introduces related materials that are made available on the CONTEC website, such as those for the included items, manuals, and software.	Included in the package (Printed matter)
Reference Manual (This Document)	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

These products are an isolated micro converter for converting the USB port of PC into RS-232C serial communications.

The COM-1(USB)H, COM-1C2-USB has one RS-232C-standard COM port channel.

The COM-1P(USB)H, COM-1P2-USB has one RS-232C-standard COM port channel that isolates the bus line with the PC.

These products support a baud rate of up to 921,600bps and has separate 128-byte / 384-byte buffer memory for transmit and receive.

Windows/Linux device driver is supported with this product.

3.Features

■ Max. 921,600bps RS-232C Serial Communication

The COM ports of this product support up to 921,600 bps.
The COM-1(USB)H, COM-1C2-USB has one RS-232C-standard COM port channel.
The COM-1P(USB)H, COM-1P2-USB has one isolation-type RS-232C-standard COM port channel.

■ Compatible to USB 2.0/USB 1.1 and not necessary to power this product externally as the bus power is used

Compatible to USB 2.0/USB 1.1 and capable to achieve high speed transfer at Full Speed (12Mbps).
Not necessary to power this product externally as the bus power of USB is used.

■ Possibly used as Windows, Linux-standard COM ports

Combining the product with our device driver COM-DRV makes it possible to use the product in the same manner as the COM ports of a PC.
This product supports communication using DCB structures in the Win32 API and Linux-standard system calls. In addition, supplies a diagnostic program to confirm hardware operation and to perform a communication test with equipment.

■ Isolation between channels and between PCs, surge protection for all signal lines (For COM-1P(USB)H, COM-1P2-USB only)

Electric isolation is provided between channels and between PCs. This prevents electric noise between PCs and external circuits. As surge protection is provided on all signal lines, you can safely use the products in environments where you are concerned about surges causing incorrect operation or damage to the PC.

■ Up to 127 converters can be installed on a single PC

Using a USB hub allows you to install up to 127 converters to a single PC.

■ Equipped with buffer memory for transmitting 128 bytes and receiving 384 bytes

This product is equipped with buffer memory for transmitting 128 bytes and receiving 384 bytes. These are FIFO format, useful for high speed communications and to reduce the load to the CPU when transmitting/receiving.

■ Equipped with 9-pin D-SUB connector for direct connections to devices such as modems

Use of a 9-pin D-SUB connector (female type) allows you to connect it to a device such as a modem directly.
It can also be connected to the cable of another 9-pin D-SUB connector (female type), if the gender changer is connected. (*Installed before shipment)

■ The control line for RS-232C can be controlled and monitored by software
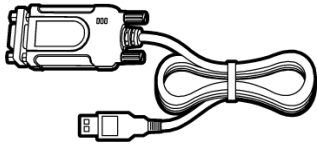
The control lines for RTS, CTS, DTR and DSR can be controlled and monitored using software.

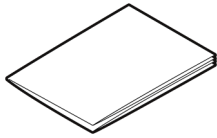# 4.Product Configuration List

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 (gender changer
attached)...1

Please read the
following...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 Web site.

Name	Contents	How to get
Windows Version Serial communication driver COM-DRV(WDM)	Software that makes it possible to use the product in the same manner as the COM ports of a PC running Windows. This software supports communication using DCB structures in the standard OS Win32 API, and the SerialPort class in the .NET Framework and the pySerial module in Python. Various sample programs such as C# and Visual Basic .NET , Visual C++, Python etc. and diagnostic program useful for checking operation is provided.	Download from the CONTEC website *1
Linux Version Serial communication driver COM-DRV(LNX)	Software that makes it possible to use the product in the same manner as the COM ports of a PC running Linux. This software conforms to Linux-standard tty drivers, and the pySerial module in Python. The software includes various sample programs such as gcc (C, C++) and Python programs.	Download from the CONTEC website *1

*1 Download the files from the following URL.

　Download　　https://www.contec.com/download/

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.

⚠DANGER	Signal word used to indicate an imminently hazardous situation which, if not avoided, will result in death or serious injury.
⚠WARNING	Signal word used to indicate a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠CAUTION	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.
- This product contains precision electronic elements and must not be used or store in locations subject to physical shock or strong vibration. Otherwise, this product may malfunction, overheat, cause a failure or breakage.
- Do not use or store this product in high temperature or low temperature surroundings, or do not expose it to extreme temperature changes. Otherwise, this product may malfunction, overheat, cause a failure or breakage.
- Do not use or store this device where it is exposed to direct sunlight or near stoves or other sources of heat. Otherwise, this product may malfunction, overheat, cause a failure or breakage.
- Do not use or store the product in the vicinity of devices that generate strong magnetic force or noise. Otherwise, this product may malfunction, overheat, cause a failure or breakage.
- Do not touch this product's terminals (USB connector, D-SUB connector) with your hands. Otherwise, this product may malfunction, overheat, or cause a failure. If the terminals are touched by someone's hands, clean the terminals with industrial alcohol.
- As this product contains components that are designed to operate at high temperature, please do not touch this product when it is in use.
- Do not touch the external connector when the power is on. Otherwise, this may malfunction, cause a failure due to static electricity.
- Make sure that your PC can supply ample power to all the products installed. Insufficiently energized products could malfunction, overheat, or cause a failure.
- 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 on the website and understand the contents.
- Do not modify the product. CONTEC will bear no responsibility for any problems, etc., resulting from modifying the product.
- 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.

● Regarding "FCC PART 15 Class A Notice"
The ferrite core must be installed in interface connecting cable so that COM-1P(USB)H and COM-1P2-USB may suit the above-mentioned standard. See below for ferrite core models (Equivalent product can also be used.).

| COM-1P(USB)H, COM-1P2-USB				
Name	Maker	Turn	Quantity	Installation Site
E04SR301334	SEIWA	2	1	On the COM cable at product side and device's side

● Regarding "CE EMC Directive Notice"
The ferrite core must be installed in interface connecting cable so that this product may suit the above-mentioned standard. See below for ferrite core models (Equivalent product can also be used.).

COM-1(USB)H, COM-1P(USB)H				
Name	Maker	Turn	Quantity	Installation Site
E04SR301334	SEIWA	2	1	On the COM cable at product side and device's side
E04SR170730A	SEIWA	1	1	On USB cable at PC side

COM-1C2-USB				
Name	Maker	Turn	Quantity	Installation Site
E04SR301334	SEIWA	2	1	On the COM cable at product side and device's side
E04SR401938	SEIWA	3	1	
E04SR170730A	SEIWA	1	1	On USB cable at PC side

COM-1P2-USB				
Name	Maker	Turn	Quantity	Installation Site
E04SR301334	SEIWA	2	1	On the COM cable at product side and device's side
E04SR401938	SEIWA	3	2	
E04SR170730A	SEIWA	1	1	On USB cable at PC side

Image diagram

Ferrite core

Cable　TURN : 1　TURN : 2　TURN : 3　TURN : 4
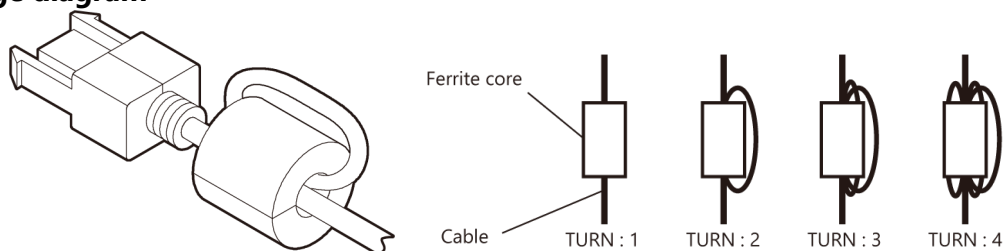
1. FCC PART 15 Class A Notice

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.

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 - 50ºC

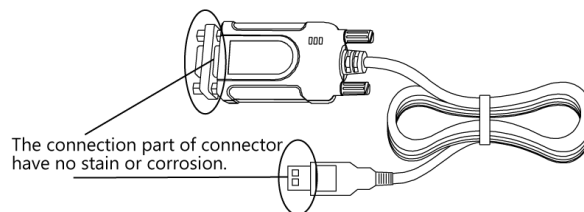## Humidity

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.

The connection part of connector have no stain or corrosion.

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 device driver and hardware.

The setup procedure will depend on your combination of OS and device driver. For details, refer to the help for the device driver you will use. This section describes the procedure to start the application program development using the Windows version of the device driver COM-DRV(WDM).

The basic procedure is also the same when using the Linux Driver for Serial Communication Board. However, the installation procedure for the device driver and some other steps are different. For details, refer to Linux driver help for serial communication boards.

Online Help [COM-DRV(LNX)]
https://help.contec.com/link/drv/lnx/com/en/

1. Setup Instructions

Taking the following steps sets up the device driver. You can use the diagnosis program later to check whether the setup function normally.

Step 1   Device driver Installation (page19)

Step 2   Hardware Setting (page20)

Step 3   Hardware Installation (page21)

Step 4   Device driver Initialization (page23)

Step 5   Operation Check (page24)

If Setup fails to be performed properly, see the "**Setup Troubleshooting (page25)**" section at the end of this chapter.

2.Device driver Installation

This manual describes how to install the Windows device driver.
Before connecting this product to a PC, install the device driver.

Download the "Device driver COM-DRV(WDM)" from the CONTEC website.

| Download | https://www.contec.com/download/ |

For the device driver installation procedure, refer to the help included in the development environment package you downloaded from the CONTEC website or "Installing Device Driver" in the online help made available on the CONTEC website.
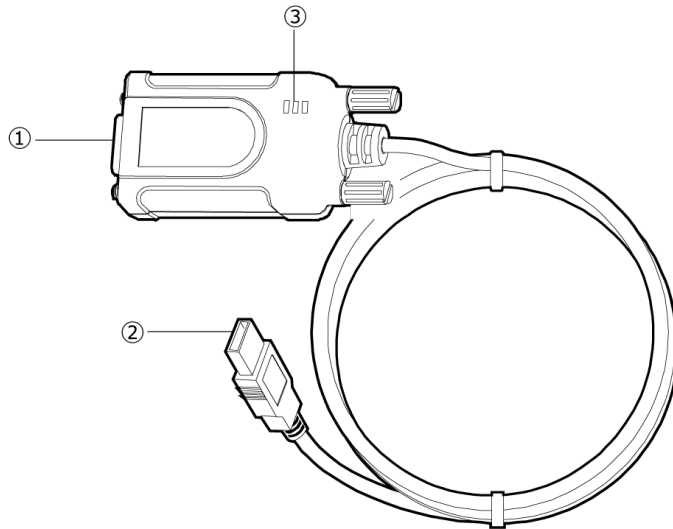
Online Help [Installing Device Driver]
https://help.contec.com/link/drv/wdm/com/install/en/

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

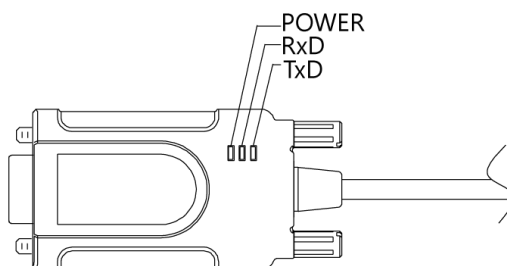Component names of the product are shown in the figure below.

| No.	Name	No.	Name
1	Interface connector (9pin D-SUB(Female))	3	LED Indicator
2	Interface connector (USB Type-A)		

2. LED Indicator

Various communication statuses can be checked.

LED name	LED display content
POWER (green)	ON ... Power ON
	OFF ... Power OFF
RxD (yellow)	Blinking ... Receiving data *1
	OFF ... Not receiving data or not connected
TxD (yellow)	Blinking ... Transmitting data *1
	OFF ... Not transmitting data or not connected

*1 If you forget the COM port number of this product, perform communication via specific COM ports and check the LEDs on the product to identify its COM port number.

4.Hardware installation

On in a Windows environment, the peripherals need to be recognized by the OS. This is called hardware installation. **When using multiple products, install one product at a time. Complete the setup of the product before starting to install the next one.**

1 Turn on the power to the PC before connecting the product.

2 When the PC has been up and running, plug the USB interface connector to a USB port in the PC.   The converter can also be connected to the PC via a USB hub.

USB port
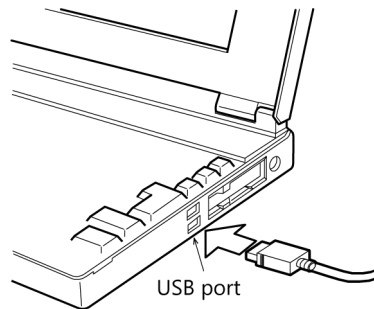
3 **After connecting the unit, the hardware will be automatically identified and the hardware installation will be complete.**

⚠ CAUTION

● Do not touch the product's terminals (USB connector) with your hands.
  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.

● Check that sufficient power can be supplied to all products connected to the PC.
  Insufficient power being supplied may lead to malfunctions, the generation of heat, or product failures.

● Problems may occur in device recognition and operations depending on the type of the USB hub.

5.Device driver Initialization

The COM port has already been assigned when installing the device driver.

How to check or change the COM port, or to configure the communication settings for the COM port, refer to the help included in the development environment package you downloaded from the CONTEC website or "Checking and Changing COM Port" in the online help made available on the CONTEC website.

Online Help [Checking and Changing COM Port]
https://help.contec.com/link/drv/wdm/com/devicename/en/

⚠ CAUTION

The COM ports of this product are assigned to COM ports not in use as determined by the operating system, not the Contec device driver.

Therefore, depending on your operating environment, COM ports may not be assigned in order starting from CH1 on this product.

For details on how to confirm the CH number and change the COM port number, refer to the help for the device driver.

6.Operation Check

You must make sure that this product and device driver operate properly. By taking this step, you can be certain that this product has been set up appropriately. Check operation by using the Our utility software when the confirmation device is connected.

When connecting the product to the actual device to be used, use caution so that malfunctions do not occur during the communication test.
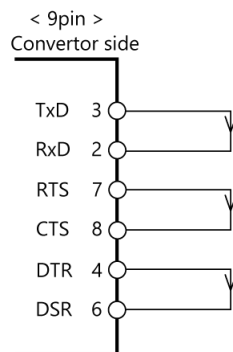
1. Check Method

Prepare an RS-232C cross cable, or a connector that returns communications.

When using a connector that returns communication, you can test communications on a COM port.

Refer to the following figure when connecting the connector.

For details on connection, refer to the **"Connection(Page26)"**.

Connection diagram for connector returning communications

```
                    < 9pin >
                   Convertor side

            TxD   3  ○─────────┐
            RxD   2  ○─────────┘
            RTS   7  ○─────────┐
            CTS   8  ○─────────┘
            DTR   4  ○─────────┐
            DSR   6  ○─────────┘
```

2. Details of Utility Software

COM-DRV(WDM) comes with utility software for confirming product operation and communications.

For more information on each software application and their use, refer to the help included in the development environment package, or the online help made available on the Contec website.

Online Help [List of CONTEC Diagnostic Programs]
https://help.contec.com/link/drv/wdm/com/diagnostic/en/

7.Setup Troubleshooting

1. Examples and Solution

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

The diagnostic program working properly indicates that there is no problem with the device or any cables. 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.

◆ The OS won't normally get started or detect the device.

Refer to the device driver HELP.

◆ If your problem cannot be resolved

Contact your retailer with diagnostic report that outputted by diagnostic programs.
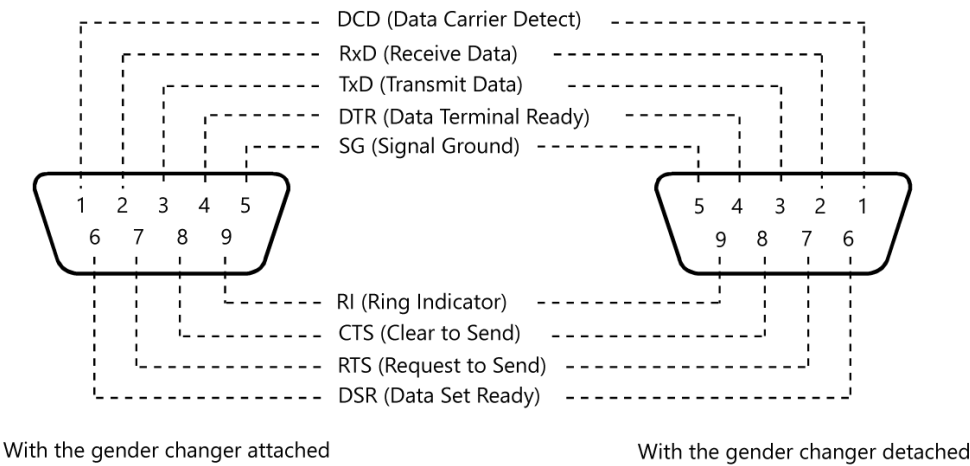
Connection

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

1.Connecting to an External Device

This chapter describes the interface connectors on the converter.

Check the information available here when connecting an external device.

1. Interface Connectors

Pin assignment of interface connectors

With the gender changer attached   With the gender changer detached

◆ Directly Connecting the Product

The RS-232C interface of this product uses a 9 pin D-SUB (female) connector.

You can connect the product directly to a device such as a modem if it has a D-SUB 9 pin (male) connector. For connection to such a device, detach the gender changer.

Note, however, that the product cannot cross-connect directly such as COM port on a PC to a device even though the device has a 9 pin D-SUB (male) connector.

### Example Connection to a Modem (Cableless)
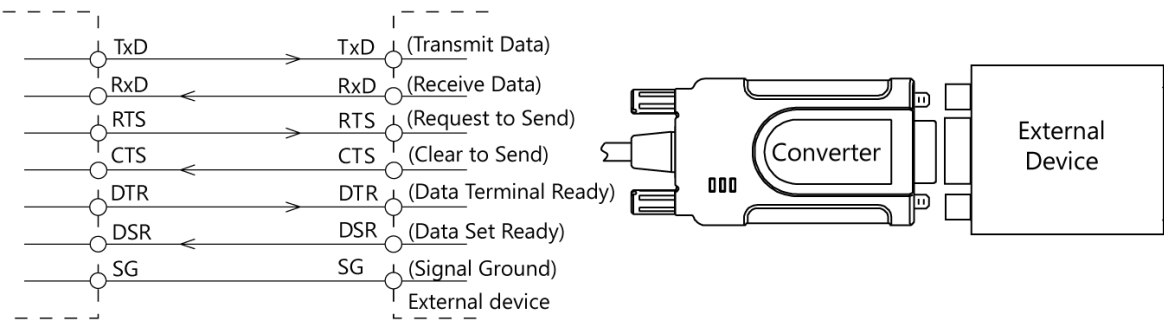
# ◆ Connecting the Product with a Cable

Use a cable when you use the gender changer to connect the product to the 9 pin D-SUB (female) RS-232C interface of the external device or when a straight connection cannot be made.

The cable to be used may be different depending on the device to connect the product to. Check the specifications of the external device, then prepare the straight type or cross (reverse) type of cable depending on the cable type (specifications). If signal conductors in the connectors require treatment, treat them according to the specifications.
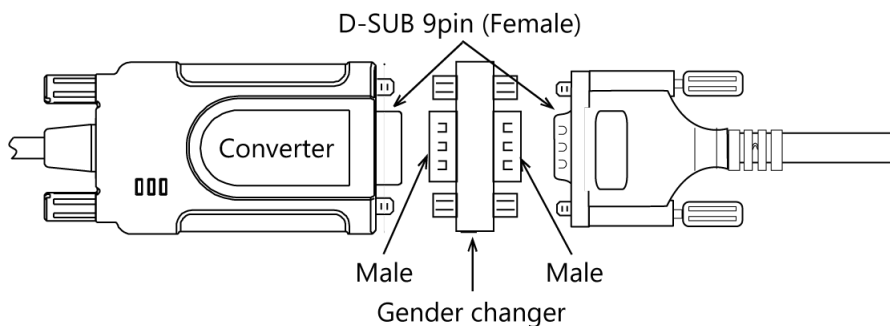
Example Connection to a PC (gender changer + cross cable)
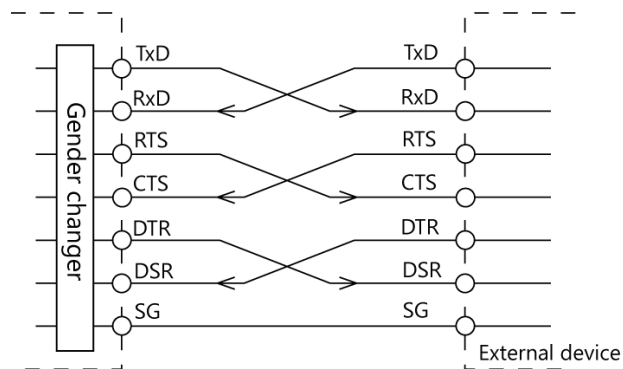
Example Connection to a device
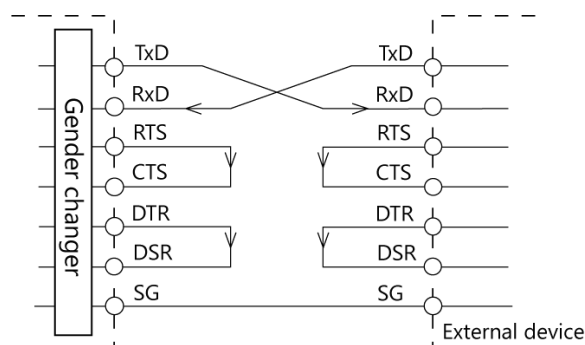
Example use of gender changer

⚠ CAUTION

Connection with conductors wired incorrectly can result in failures in the product and external device.

◆ Gender changer

The interface connector of this product is a 9 pin D-SUB (female) connector.

The product is shipped with the gender changer attached to the interface connector. When connecting the product with a screw-locked (female) cable, leave the gender changer attached to the connector.

When connecting the product to a device having a 9 pin D-SUB (male) connector using a straight cable, remove the gender changer and connect the product directly to the device.

Function

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

1.Communication Function

◆ Serial Data Transmission

Sends and receives data in accordance with the RS-232C standard.

◆ RS-232C Control Lines

All ports include the RTS, CTS, DTR, and DSR control lines.

The lines can be controlled or monitored by device driver from the application.

◆ Setting the Baud Rate

You can set the baud rate of this product using the device driver.

Baud rate : 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200, 230400, 460800, 921600bps

◆ Bus isolation [COM-1P(USB)H, COM-1P2-USB]

It is electrically isolated between the PC to be installed and the remote device.

Isolation between buses, prevents electrical disturbance between the PC and an external circuit and inter-channel interference as well.

The converter can therefore be used comfortably even when line noise can be easily generated to seemingly cause the PC to malfunction or break.

◆ Surge Protection [COM-1P(USB)H, COM-1P2-USB]

As the RS-232C control lines are all surge-protected, you can use the product without anxiety about surges which can cause the PC to malfunction or be damaged.

Appendix

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

1.Hardware Specification

Function Specifications

Item	COM-1(USB)H	COM-1P(USB)H	COM-1C2-USB	COM-1P2-USB
Number of channels	1 channel			
Interface type	RS-232C			
Isolation	-	Bus isolation	-	Bus isolation
Isolation voltage	-	300VDC	-	300VDC
Transfer method	Asynchronous serial transfer			
Baud rate	300 - 921,600bps *1 *2			
Data length	7, 8 bit / 1, 2 stop bit			
Parity check	Even, Odd, Non-parity			
Controller chip	FT232BL		XR21V1410	
	Mounting the FIFO memory as the common buffer of RS-232C communication and USB. Sending: 128byte / receiving: 384byte (by the view of PC)			
Connecting distance	Within 15m			
Operation guaranteed voltage	5V±5% *3			
Power consumption *3	5VDC 50mA (Max.)	5VDC 280mA (Max.)	5VDC 50mA (Max.)	5VDC 280mA (Max.)
USB bus specification	USB Specification 2.0/1.1 standard			
Power consumption	Only bus power			
USB transmission speed	12Mbps (full speed mode)			
Cable length	1.8m			
Physical dimension (mm)	78.3(W) x 20.5(D) x 36.5(H) 91.0(W) x 20.5(D) x 36.5(H) (When connecting gender changer)			
Weight	130g 140g (When connecting gender changer)			

*1   These items can be set by software.
*2   Data transmission at high speed may not be performed normally depending on the environment including the type of status of connected material of cable and environment.
*3   It doesn't correspond to Low-power Bus-powered Function (4.4V operation).

Installation Environment Requirements

Item	Specifications
Operating ambient temperature	0 - 50°C
Operating ambient humidity	10 - 90%RH (No condensation)
Floating dust particles	Not to be excessive
Corrosive gases	None
Standard	VCCI Class A, FCC Class A, CE Marking (EMC Directive Class A, RoHS Directive), UKCA

Gender changer specification

Item	Specifications
Engagement	9 pin D-SUB male, thumb screw : UNC#4-40 (inch screw threads) x 2
Wiring	Straight over entire length
Physical dimension (mm)	18.0(W) x 12.5(D) x 31.0(H)
Weight	10g

2.Physical Dimensions

#4-40UNC(inch screw)

36.5

59.8

78.3

20.5

[mm]
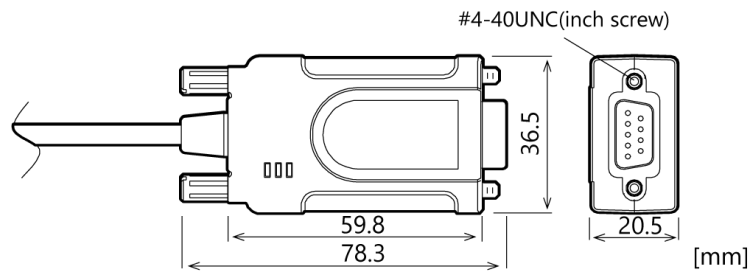
Customer Support and Inquiry

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 device driver, firmware, and differential manuals in several languages. Membership registration (myCONTEC) is required to use the services.
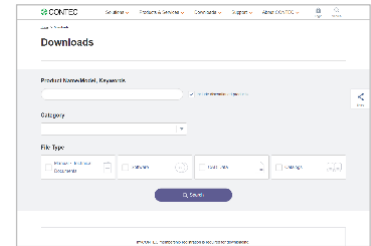
Revision History

MONTH YEAR	Summary of Changes
April 2003	The First Edition.
April 2024	Changed the layout of the manual.
May 2025	Add product lineup

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