

Non-isolated bidirectional digital I/O terminal for USB2.0 DIO-24DY-USB



* Specifications, color and design of the products are subject to change without notice.

Features

Non-insulated LVTTTL-level inputs/outputs (Positive)

The product is provided with 24 non-insulated LVTTTL-level I/O ports with a response speed of 200 nsec (positive logic). This allows you to use a total of up to 24 channels of I/O digital signals in three sets of eight.

Compatible to USB1.1/USB2.0 and not necessary to power this product externally as the bus power is used.

Compatible to USB1.1/USB2.0 and capable to achieve high speed transfer at HighSpeed (480 Mbps). Not necessary to power this product externally as the bus power of USB is used.

Easy-to-wire terminal connector adopted

Adoption of terminal connector (with screws) enables to achieve easy wiring.

Windows/Linux compatible driver libraries are supported.

Using the digital I/O driver makes it possible to create applications of Windows/Linux. In addition, a diagnostic program by which the operations of hardware can be checked is provided.

Included Items

Product [DIO-24DY-USB] ... 1
Please read the following ... 1
Interface connector plugs ... 2
USB Cable (1.8m) ... 1
USB Cable Attachment ... 1

Optional Products

Product Name	Model type	Description
Connector	CN6-Y14	14pin Screw Terminal Connector Set (6 pieces)
Bracket	BRK-USB-Y	Bracket for USB I/O Terminal products

* Information about the option products, see the Contec's website.

This product is a USB2.0-compatible terminal that allows your PC to expand the bidirectional I/O functionality of digital signals. The terminal comes with 24 channels of non-insulated LVTTTL-level inputs/outputs. Inputs and outputs can be switched in blocks of eight by software. Its compact appearance makes it suitable for PC application. In addition, no external power supply is required, as the terminal operates on the USB bus power.

Windows/Linux driver is supported with this product.

- * The contents in this document are subject to change without notice.
- * Visit the CONTEC website to check the latest details in the document.
- * The information in the data sheets is as of April, 2023.

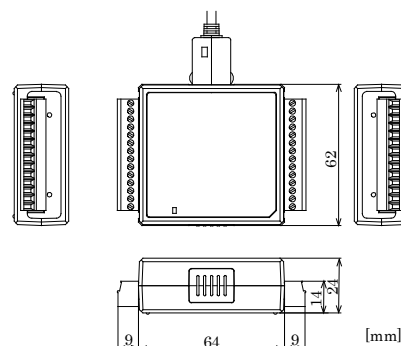
Specifications

Item	Specifications
I/O	
Number of I/O channels	24 channels
I/O format	LVTTTL-level (Positive logic)
Input resistance	33Ω
Output rating	3.3VDC 8mA
Response time	Within 200nsec *1
USB	
Bus specification	USB Specification 2.0/1.1 standard
USB transfer rate	12Mbps(Full-speed), 480Mbps(High-speed) *1
Power supply	Bus power
Common	
Connector	14 pin (screw-terminal) plug header
Number of terminals used at the same time	127 terminals (Max.) *2
Current consumption (Max.)	5VDC 250mA
Operating conditions	0 - 50°C, 10 - 90%RH(No condensation)
Allowable distance of signal extension	Approx. 1.5m (depending on wiring environment)
Physical dimensions(mm)	64(W) x 62(D) x 24(H) (exclusive of protrusions)
Weight	70g (Not including the USB cable, attachment)
Attached cable	USB cable 1.8m
Compatible wires	AWG28 - 16
Standard	VCCI Class A, FCC Class A, CE Marking (EMC Directive Class A, RoHS Directive), UKCA

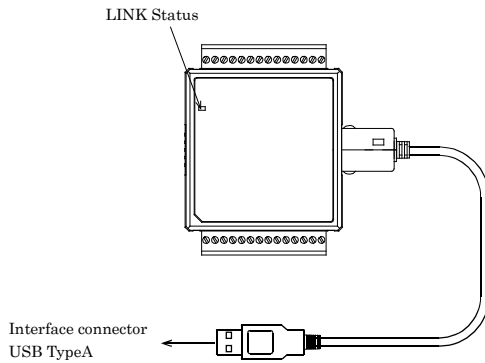
*1 Actual throughput is hundreds of □ seconds (This depends on the host PC environment used (OS and USB host controller).)

*2 As a USB hub is also counted as one device, you cannot just connect 127 USB terminals.

Physical Dimensions



Component Name



List of Status LED Functions

Name	Function	Indicator color	LED indicator
LINK Status	USB communication status	GREEN	ON : Communication established
			OFF : Communication unestablished
	PC connection status		ON : PC communication established
			OFF : PC communication unestablished

Support Software

Windows version of digital I/O driver API-DIO(WDM)

The API-DIO(WDM) is the Windows version driver library software that provides products in the form of Win32 API functions (DLL). Various sample programs such as Visual Basic and Visual C++, etc and diagnostic program *1useful for checking operation is provided.

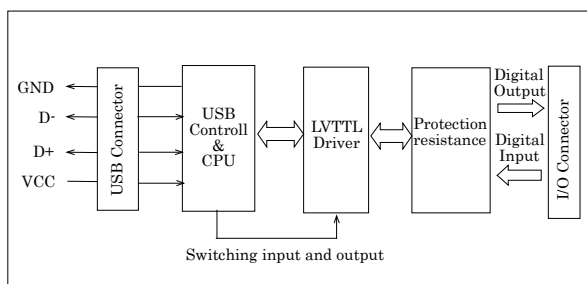
For more details on the supported OS, applicable language and new information, please visit the CONTEC's Web site.

Linux version of digital I/O driver API-DIO(LNX)

The API-DIO(LNX) is the Linux version driver software which provides device drivers (modules) by shared library and kernel version. Various sample programs of gcc are provided.

For more details on the supported OS, applicable language and new information, please visit the CONTEC's Web site.

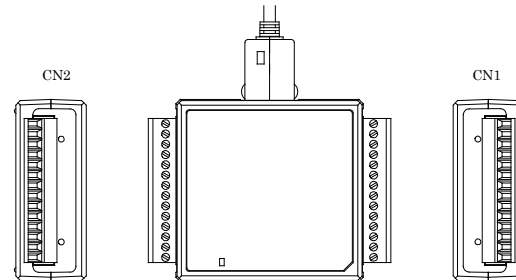
Using the On-terminal Connectors



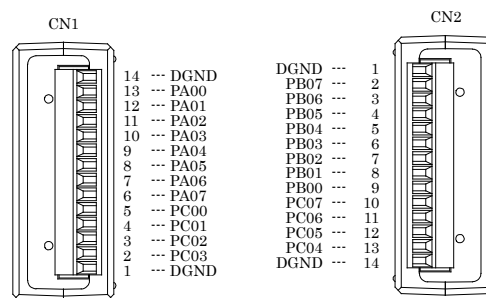
Using the On-terminal Connectors

Connecting a terminal to a Connector

To connect an external device to this terminal, plug the cable from the device into the interface connector (CN1, CN2) shown below.



Connector Pin Assignment



PA00 - PA07, PB00 - PB07, PC00 - PC07	Digital I/O signals
DGND	Common digital ground for digital I/O signals

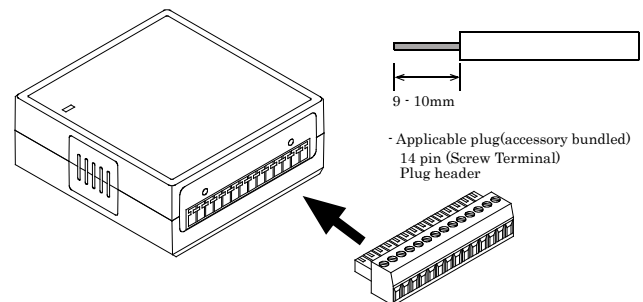
Cable connection

When connecting the product to an external device, you can use the supplied connector plug.

For wiring, strip off approximately 9 - 10mm of the covered part of a wire rod and then insert it to the opening. After the insertion, secure the wire rod with screws. Compatible wires are AWG 28 - 16.

CAUTION

Removing the connector plug by grasping the cable can break the wire.



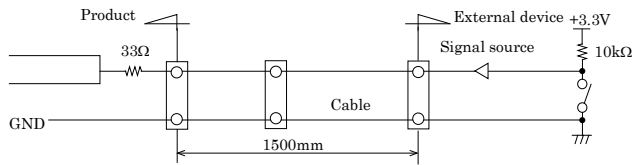
Input/Output Signal Connection

Input Circuit

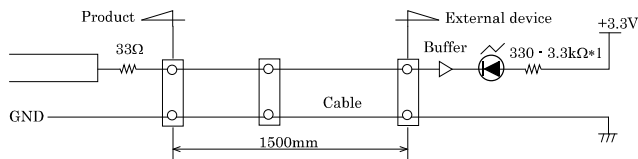
As I/O signals are LVTTTL (3.3V) level signals, the total cable length should be within 1.5 m.

The input is provided with an input protective resistor (33Ω).

GND is common to all I/O pins.



Output Circuit



If the signal source is affected by noise or distant from the product, the product may fail to input accurate data depending on the connection. I/O signals are LVTTTL-level active high signals. When the external input signal is LVTTTL level, the Low level represents logic 0 and the High level represents logic 1. When the program outputs 0 and 1, the product outputs the Low and High level signals, respectively.