# Digi

# Digital Output Board with Opto-Isolation for PCI Express DO-64L-PE



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

This product is a PCI Express bus-compliant interface board for output of digital signals. This product can output digital signals at 12 - 24VDC.

DO-64L-PE features 64 opto-coupler isolated open-collector outputs (current sink type). In addition, output transistor protection circuit (surge voltage protection and overcurrent protection).

Windows/Linux device driver is supported with this product.

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### Features

### Opto-coupler isolated open-collector output (current sink type)

DO-64L-PE has the 64ch of opto-coupler isolated open-collector output (current sink type) whose response time is 200µsec. Common terminal provided per 16channels, capable of supporting a different external power supply. Supporting driver voltages of 12 - 24 VDC for I/O.

### Opto-coupler bus isolation

As the PCI Express bus (PC) is isolated from the output interfaces by opto-couplers, this product has excellent noise performance.

### Windows/Linux support device driver

Using the device driver API-TOOL 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.

# Zener diode for surge voltage protection and the circuit for overcurrent protection.

Zener diodes are connected to the output circuits to protect against surge voltages. In addition, the output circuit, it attaches the overcurrent protection circuit at the output 8-channel unit. The output rating is max. 35VDC, 100mA per channel.

# Functions and connectors are compatible with PCI compatible board PIO-32/32L(PCI)H series.

DO-64L-PE : The functions same with PCI compatible board PO-64L(PCI)H are provided.

In addition, as there is compatibility in terms of connector shape and pin assignments, it is easy to migrate from the existing system.

## **Packing List**

Product ...1

Please read the following ... 1

### Specification

### **Function Specifications**

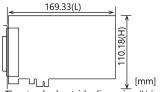
	Item	Specifications
Output	Туре	Opto-Isolated Open Collector Output (current sinking type) (Negative logic *1)
	Number of Channels	64ch (One common power supply per 16 channels)
	Output rated voltage	35VDC (Max.)
	Output rated current	100mA/channel (Max.)
	Residual voltage with output on	0.5V or less (Output current ≤ 50mA), 1.0V or less (Output current ≤ 100mA)
	Surge protector	Zener diode RD47FM(Renesas) or equivalent
	Response time	200µsec within
Common	Connecting distance	50m (Typ.)(depending on wiring environment)
	I/O address	Any 32-byte boundary
	Interruption level	Not used
	Boards in one system	Maximum of 16 boards can be install in a same system.
	Isolated voltage	500Vrms
	External circuit power supply	12 - 24VDC (±10%)
	Power consumption	3.3VDC 580mA (Max.)
	Bus specification	PCI Express Base Specification Rev. 1.0a x1
	Dimension (mm)	169.33(L) x 110.18(H)
	Weight	215g

<sup>\*1</sup> Data "0" and "1" correspond to the High and Low levels, respectively

### 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, CE Marking (EMC Directive Class A, RoHS Directive), UKCA						

## **Physical Dimensions**



The standard outside dimension (L) is the distance from the end of the card to the outer surface of the slot cover.

<sup>\*</sup>Visit the CONTEC website to check the latest details in the document.

<sup>\*</sup>The information in the data sheets is as of February 2024.



# Support Software

Name	Contents	How to get
Windows Version Digital I/O Driver software API-DIO(WDM)	The Windows device driver is provided as a form of Windows API functions. 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 Digital I/O Driver software API-DIO(LNX)	The Linux device driver is provided as a shared library. The software includes various sample programs such as gcc (C, C++) and Python programs, as well as a configuration tool to configure the device settings.	Download from the CONTEC website *1
Software Development Tool Kits (SDK) and Support Software	In addition to the device drivers, we offer many software programs for using CONTEC devices in an easier manner.	Download from the CONTEC website *2

<sup>\*1</sup> Download the files from the following URL.

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

## **Optional Products**

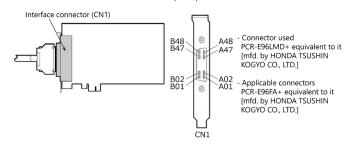
Product Name	Model type	Description
Shielded Cable with Two 96-Pin Half-Pitch Connectors	PCB96PS-0.5P	0.5m
Sillelued Cable With Two 96-Pin Hall-Pitch Conflectors		
	PCB96PS-1.5P	1.5m
	PCB96PS-3P	3m
	PCB96PS-5P	5m
Flat Cable with 96-pin Half-Pitch Connectors at Both Ends	PCB96P-1.5	1.5m
	PCB96P-3	3m
Shielded Cable with One 96-pin Half-Pitch Connector	PCA96PS-0.5P	0.5m
	PCA96PS-1.5P	1.5m
	PCA96PS-3P	3m
	PCA96PS-5P	5m
Flat Cable with One 96-pin Half-Pitch Connector	PCA96P-1.5	1.5m
	PCA96P-3	3m
Connection Conversion Shield Cable (96P→37P x 2)	PCB96WS-1.5P	1.5m
	PCB96WS-3P	3m
	PCB96WS-5P	5m
Screw Terminal (M3 * 96)	EPD-96A	*1*2
Terminal Unit for Relay Terminal Banks	EPD-96	*2
Screw Terminal (M3 * 37P)	EPD-37A	*1 *3
Screw Terminal (M3.5 * 37)	EPD-37	*3
Screw Terminal	DTP-64A	*2
General Purpose Terminal	DTP-3C	*3
Screw Terminal	DTP-4C	*3
Signal monitor Accessory for Digital I/O (64bits)	CM-64L	*2
Signal monitor Accessory for Digital I/O (32bits)	CM-32L	*3
Connector Conversion Board (96pin→37pinx2)	CCB-96	*4

- "Spring-up" type terminal is used to prevent terminal screws from falling off.
- PCB96P or PCB96PS optional cable is required separately.
- PCB96WS optional cable is required separately.

  Option cable PCB96P or PCB96PS, and the cable for 37-pin D-SUB are required separately.

# Connecting an Interface Connector

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



### Layout on the Interface Connector(CN1)

Common minus pin for   Common plus pin for   N.C.   B25   N.C.   B27   N.C.   B26   N.C.   B27   N.C.   B28   N.C.   B28   N.C.   B22   N.C.   B21   N.C.   B22   N.C.   B21   N.C.   B22   N.C.   B21   N.C.   B22   N.C.   B21   Common plus pin for   OP-4/5   B20   Common plus pin for   OP-4/5   B20   Common plus pin for   OP-4/5   B20   OP-0/1	Common plus pin for	OP-6/7	B48		A48	OP-2/3	Common plus pin for		
1-7 port	+6/+7 output ports	OP-6/7	B47		A47	OP-2/3	+2/+3 output ports		
1-7 port (Output)		O-77	B46		A46	O-37			
+7 port (Output)		O-76	B45		A45	O-36			
Court   Cour		O-75	B44		A44	O-35			
O-72 B41 O-71 B40 O-70 B39 O-67 B38 O-66 B37 O-65 B36 O-63 B34 O-62 B33 O-61 B32 O-60 B31 O-61 B32 O-60 B31 O-67 B30 O-67 B30 O-68 B36 O-69 B31 O-61 B32 O-60 B31 O-61 B32 O-62 B33 O-61 B32 O-61 B32 O-62 B33 O-63 B34 O-62 B33 O-63 B34 O-62 B33 O-63 B34 O-62 B33 O-63 B34 O-63 B34 O-64 B39 O-65 B17 O-55 B16 O-54 B15 O-55 B16 O-55 B16 O-56 B37 O-66 B37 O-66 B37 O-66 B37 O-67 B33 O-61 B32 O-60 B33 O-61 B32 O-60 B33 O-61 B32 O-62 B33 O-6		O-74	B43		A43	0-34			
O-71   B40     O-70   B39     O-67   B38     O-66   B37     O-65   B36     O-60   B35     O-61   B32     O-62   B33     O-61   B32     O-60   B31     O-61   B32     O-61   B32     O-61   B32     O-62   B33     O-61   B32     O-61   B32     O-62   B33     O-63   B34     O-62   B33     O-63   B34     O-62   B33     O-60   B31     O-61   B32     O-62   B33     O-63   B34     O-62   B33     O-63   B34     O-62   B33     O-63   B34     O-63   B34     O-62   B33     O-63   B34     O-63   B34     O-64   B39     O-65   B16     O-67   B18     O-68   B17     O-16     A10   O-17     A10   O-10     A10   O-07     A09   O-06     A09   O-06     A09   O-06     A09   O-06     A09   O-06     A09   O-06     A00   O-03     O-01     O-01     O-01     O-01     O-01     O-01     O-01     O-02     O-03     O-04     O-04     O-04     O-04     O-05     O-04     O-04     O-07     O-04     O-07     O-04     O-07     O-04     O-07     O-04     O-07     O-04     O-07     O-06     O-08	(Output)	O-73	B42		A42	O-33	(Output)		
Common minus pin for +6/+7 output ports   O.54   B25   N.C. B25   N.C. B25   N.C. B26   N.C. B26   N.C. B27   N.C. B28   N.C. B29   N.C. B29   N.C. B29   N.C. B29   N.C. B29   N.C. B29   N.C. B21   N.C. B21   N.C. B22   N.C. B21   N.C. B22   N.C. B21   N.C. B22   N.C. B21   N.C. B22   N.C. B22   N.C. B22   N.C. B24   N.C. B25   N.C. B25   N.C. B26   N.C. B27   N.C. B29		O-72	B41		A41	O-32			
Common minus pin for +6/+7 output ports   Common plus pin for +4/+5 output p		O-71	B40		A40	O-31			
Common minus pin for +6/+7 output ports   Common plus pin for +6/+7 output ports		O-70	B39		A39	O-30			
Common plus pin for +d/+5 output ports   Common plus pin for +d/+5 output ports		O-67	B38		A38	O-27			
+6 port (Output)  -6   0-64   835   848   -628   834   0-62   833   0-61   832   848   -667   830   -667   830   828   829   8		O-66	B37		A37	O-26			
He port (Output)		O-65	B36		A36	O-25			
O-62 B33 O-61 B32 O-60 B31 O-20 A30 ON-2/3 Common minus pin for +2/+3 output port A29 ON-2/3 A28 NC A27 NC A26 NC A27 NC A26 NC A27 NC A26 NC A27 NC A26 NC A27 NC A28 NC A29 ON-2/3 A10 O-001 A20 OP-0/1 Common plus pin for +0/+1 output port A10 OP-0/1 Common plus pin for +0/+1 output port A11 O-16 A16 O-15 A15 O-14 A17 O-16 A16 O-15 A17 O-16 A16 O-15 A17 O-16 A16 O-15 A17 O-16 A10 O-07 A09 O-06 A08 O-05 A08 O-05 A07 O-04 A09 O-06 A09 O-06 A08 O-05 A07 O-04 A09 O-06 A08 O-05 A07 O-04 A09 O-06 A08 O-03		O-64	B35		A35	O-24			
O-61   B32   O-60   B31	(Output)	O-63	B34		A34	O-23	(Output)		
Common minus pin for +6/+7 output ports   N.C.   B.29     N.C.   B.28     N.C.   B.25     N.C.   B.22     N.C.   B.23     N.C.   B.22     N.C.   B.21     N.C.   B.22     N.C.   B.21     N.C.   A.22     N.C.   A.21     A.20   OP-0/1     A.21   OP-0/1     A.21   OP-0/1     A.21   OP-0/1     A.21   OP-0/1     A.22   OP-0/1     A.23   OP-0/1     A.24   OP-0/1     A.25   OP-0/1     A.27   OP-0/1     A.20   OP-0/1     A.21   OP-0/1     A.21   OP-0/1     A.21   OP-0/1     A.22   OP-0/1     A.23   OP-0/1     A.21   OP-0/1     A.22   OP-0/1     A.23   OP-0/1     A.24   OP-0/1     A.25   OP-0/1     A.26   OP-0/1     A.27   OP-0/1     A.27   OP-0/1     A.28   OP-0/1     A.29   OP-0/1     A.29   OP-0/1     A.20   OP-0/1     A.21   OP-0/1     A.21   OP-0/1     A.21   OP-0/1     A.21   OP-0/1     A.21   OP-0/1     A.22   OP-0/1     A.23   OP-0/1     A.24   OP-0/1     A.25   OP-0/1     A.27   O		O-62	B33	Щ	A33	O-22			
Common minus pin for +6/+7 output ports  N.C. B28  N.C. B27  N.C. B28  N.C. B28  N.C. B25  N.C. B22  N.C. B23  N.C. B22  N.C. B23  N.C. B22  N.C. B23  N.C. B22  N.C. B21  N.C. B21  N.C. B22  N.C. B21  N.C. B21  N.C. B22  N.C. B21  N.C. A22  N.C. A21  N.C. A22  N.C. A22  N.C. A21  N.C. A20  N.C. A21  N.C. A22  N.C. A21  N.C. A22  N.C. A21  N.C. A22  N.C. A21  A20  OP-0/1  A19  OP-0/1  A10  O-16  A16  O-15  A15  O-14  A11  O-10  A11  O-10  A11  O-10  A11  O-10  A10  O-46  B09  O-45  B08  O-44  B07  O-45  B08  O-44  B07  O-45  B08  O-44  B07  O-45  A06  O-03  (Output)		O-61	B32		A32	O-21			
+6/+7 output ports ON-6/7 B29  N.C. B28  N.C. B26  N.C. B25  N.C. B24  N.C. B23  N.C. B22  N.C. B23  N.C. B22  N.C. B21  OP-4/5 B20  OP-4/5 B19  O-57 B18  O-56 B17  O-55 B16  O-58 B15  O-59 B15  O-50 B11  O-52 B13  O-51 B12  O-50 B11  O-51 B12  O-50 B11  O-47 B10  O-46 B09  O-45 B08  O-44 B07  O-43 B06  A29 ON-2/3 +2/+3 output port  A28 N.C.  A27 N.C.  A26 N.C.  A27 N.C.  A28 N.C.  A28 N.C.  A27 N.C.  A28 N.C.  A29 ON-2/3  A29 ON-2/3  A29 ON-2/3  A29 ON-2/3  A29 ON-2/3  A29 ON-2/3  A20 OP-0/1  A20 OP-0/1  A20 OP-0/1  A20 OP-0/1  A10 O-07  A17 O-16  A16 O-15  A15 O-14  A17 O-16  A16 O-15  A17 O-16  A16 O-15  A17 O-16  A17 O-16  A18 O-17  A17 O-16  A18 O-17  A17 O-16  A10 O-07  A10 O-07  A09 O-06  A08 O-05  A08 O-05  A08 O-05  A07 O-04  +0 port (Output)		O-60	B31		A31	O-20			
NC. B28 NC. B27 NC. B26 NC. B25 NC. B24 NC. B23 NC. B22 NC. B22 NC. B21 Common plus pin for +4/+5 output ports  0-4/5 B19 0-57 B18 0-56 B17 0-55 B16 0-58 B15 0-58 B16 0-59 B11 0-51 B12 0-50 B11 0-51 B12 0-50 B11 0-44 B07 0-44 B07 0-44 B07 0-44 B07 0-43 B06		ON-6/7	B30		A30	ON-2/3	Common minus pin for		
N.C. 827 N.C. 826 N.C. 825 N.C. 824 N.C. 823 N.C. 822 N.C. 821 N.C. 823 N.C. 822 N.C. 821 N.C. 821 N.C. 823 N.C. 822 N.C. 823 N.C. 822 N.C. 823 N.C. 822 N.C. 821 N.C. 824 N.C. 824 N.C. 824 N.C. 824 N.C. 825 N.C. 824 N.C. 825 N.C. 824 N.C. 825 N.C. 824 N.C. 824 N.C. 825 N.C. 824 N.C. 826 N.C. 825 N.C. 824 N.C. 826 N.C	+6/+7 output ports	ON-6/7	B29		A29	ON-2/3	+2/+3 output ports		
N.C. B26 N.C. B25 N.C. B24 N.C. B23 N.C. B22 N.C. B21 N.C. A23 N.C. A22 N.C. A21 N.C. A20 OP-0/1 Common plus pin for 40/+1 output port A19 OP-0/1 +0/+1 output port A19 OP-0/1 +0/+1 output port A17 O-16 N.C. A24 N.C. A25 N.C. A27 N.C. A28 N.C. A28 N.C. A29 N.C. A21 N.C. A29 N.C. A29 N.C. A29 N.C. A21 N.C. A29 N.C. A29 N.C. A21 N.C. A29 N.C. A29 N.C. A29 N.C. A21 N.C. A29 N.C. A21 N.C. A29 N.C. A29 N.C. A29 N.C. A29 N.C. A21 N.C. A29 N.C. A29 N.C. A29		N.C.	B28		A28	N.C.			
N.C.   825   N.C.   824   N.C.   824   N.C.   A24   N.C.   A23   N.C.   A22   N.C.   A24   N.C.   A23   N.C.   A22   N.C.   A24   N.C.   A22   N.C.   A24   N.C.   A25   N.C.   A26   N.C.   A27   N.C.   A27   N.C.   A28   N.C.   A29   N.C.		N.C.	B27		A27	N.C.			
N.C.   N.C.   B24   N.C.   A23   N.C.   A24   N.C.   A23   N.C.   A25   N.C.   A26   N.C.   A27   N.C.   A27   N.C.   A28   N.C.   A28   N.C.   A29   N.C.   A29		N.C.	B26		A26	N.C.			
NC 824 NC 823 NC 822 NC 821 NC	NG	N.C.	B25		A25	N.C.	NG		
NC B22 NC B21  Common plus pin for +4/+5 output ports  OP-4/5 B19 O-57 B18 O-56 B17 O-55 B16 O-54 B15 O-52 B13 O-51 B12 O-50 B11 O-47 B10 O-46 B09 O-45 B08 O-44 B07 O-43 B06  NC B22 NC A21 NC A20 OP-0/1 Common plus pin for +0/+1 output port A19 OP-0/1 +1/+1 output port A18 O-17 A17 O-16 A16 O-15 A15 O-14 +1 port A11 O-10 A10 O-07 A09 O-06 A08 O-05 A07 O-04 +0 port (Output)	N.C.	N.C.	B24		A24	N.C.	N.C.		
NC. B21  Common plus pin for +4/+5 output ports  OP-4/5 B19  O-57 B18  O-56 B17  O-55 B16  O-58 B13  O-51 B12  O-50 B11  O-50 B11  O-50 B11  O-47 B10  O-46 B09  O-45 B08  O-44 B07  O-43 B06  NC. A20 OP-0/1 Common plus pin for +0/+1 output port A19 OP-0/1 +1 port A10 O-15  A15 O-14 +1 port A14 O-13 (Output)  A13 O-12  A14 O-13  A15 O-14  A16 O-15  A17 O-16  A16 O-15  A17 O-16  A17 O-16  A18 O-17  A17 O-16  A18 O-17  A17 O-16  A18 O-17  A19 OP-0/1  A10 O-15  A11 O-10  A10 O-07  A09 O-06  A08 O-05  A08 O-05  A07 O-04 +0 port (Output)		N.C.	B23		A23	N.C.			
Common plus pin for +4/+5 output ports		N.C.	B22		A22	N.C.			
+4/+5 output ports		N.C.	B21		A21	N.C.			
+5 port (Output)  -5 port (Output)  -6 port (Output)  -7 port (Out	Common plus pin for	OP-4/5	B20		A20	OP-0/1	Common plus pin for		
O-56 B17 O-55 B16 O-54 B15 O-53 B14 O-52 B13 O-51 B12 O-50 B11 O-47 B10 O-46 B09 O-45 B08 O-44 B07 O-43 B06 O-43 B06 O-44 B07 O-43 B06 O-65 B17 O-56 B17 A01 A10 O-16 A16 O-15 A15 O-14 A14 O-13 O-12 A12 O-11 A11 O-10 A10 O-07 A09 O-06 A08 O-05 A07 O-04 +0 port (Output)	+4/+5 output ports	OP-4/5	B19		A19	OP-0/1	+0/+1 output ports		
+5 port (Output)		O-57	B18		A18	O-17			
-5 port (Output)  O-55 B16 O-54 B15 O-53 B14 O-52 B13 O-51 B12 O-50 B11 O-47 B10 O-46 B09 O-45 B08 O-44 B07 O-43 B06  O-44 B07 O-43 B06  A16 O-15 A15 O-14 +1 port (Output) A11 O-10 A10 O-07 A09 O-06 A08 O-05 A07 O-04 +0 port (Output)		O-56	B17		A17	O-16			
(Output) O-53 B14 [96] [48] A11 O-13 (Output)  O-52 B13 O-51 B12 A12 O-50 B11 A11 O-10  O-46 B09 O-45 B08 O-44 B07 O-44 B07 O-43 B06 A06 O-03 (Output)		O-55	B16		A16	O-15			
(Output)	+5 port	0-54	B15	D01	A15	0-14	+1 port		
O-52 B13 A13 O-12 O-51 B12 A12 O-11 O-50 B11 A11 O-10  O-47 B10 A10 O-07 O-46 B09 A09 O-06 O-45 B08 A08 O-05 O-44 B07 A07 O-04 +0 port O-43 B06 A06 O-03 (Output)	(Output)	O-53	B14		A14	O-13	(Output)		
O-50 B11 A11 O-10  O-47 B10 A10 O-07  O-46 B09 A09 O-06  O-45 B08 A08 O-05  O-44 B07 A07 O-04 +0 port  O-43 B06 A06 O-03		O-52	B13		A13	O-12			
O-47 B10 A10 O-07 O-46 B09 A09 O-06 O-45 B08 A08 O-05 O-44 B07 O-43 B06 A06 O-03 (Output)		O-51	B12		A12	O-11			
O-46 B09 A09 O-06 O-45 B08 A08 O-05 +4 port (Output) A08 O-04 +0 port O-43 B06 A06 O-03 (Output)		O-50	B11		A11	O-10			
-4 port (Output)  O-45 B08 O-44 B07 O-43 B06  A08 O-05 A07 O-04 +0 port A06 O-03 (Output)		O-47	B10		A10	O-07			
+4 port (Output)		O-46	B09		A09	O-06			
+4 port (Output) O-43 B06 A06 O-03 (Output)		O-45	B08		A08	O-05			
O-43 B06 A06 O-03 (Output)	. A part (Outrout)	0-44	B07		A07	O-04	+0 port		
O-42 B05 A05 O-02	+4 port (Output)	O-43	B06		A06	O-03			
		0-42	B05		A05	O-02			
O-41 B04 A04 O-01		0-41	B04		A04	O-01			
O-40 B03 A03 O-00		O-40	B03		A03	O-00			
Common minus pin for ON-4/5 B02 A02 ON-0/1 Common minus pin	Common minus pin for	ON-4/5	B02		A02	ON-0/1	Common minus pin for		
		ON-4/5	B01		A01	ON-0/1	+0/+1 output ports		

The numbers in square brackets [] are pin numbers designated by HONDA TSUSHIN KOGYO CO., LTD.

<sup>\*2</sup> For supported software, search the CONTEC website for this product and view the product page. https://www.contec.com/



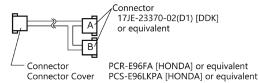
Signal name	Description
O-00 - O-77	64 output signal pins. Connect these pins to the input signal pins of the external device.
OP-0/1	Connect the positive side of the external power supply. These pins are common to 16 output signal pins.
OP-2/3	Connect the positive side of the external power supply. These pins are common to 16 output signal pins.
OP-4/5	Connect the positive side of the external power supply. These pins are common to 16 output signal pins.
OP-6/7	Connect the positive side of the external power supply. These pins are common to 16 output signal pins.
ON-0/1	Connect the negative side of the external power supply. These pins are common to 16 channels output signal. One pin permissible current of the connector is 1A. Please connect necessary number of pins for the corresponding total current of the output 16 channels. When 16 channels are used by the output full ratings (100mA per 1 channel), it is necessary to connect all.
ON-2/3	Connect the negative side of the external power supply. These pirs are common to 16 channels output signal. One pin permissible current of the connector is 1A. Please connect necessary number of pins for the corresponding total current of the output 16 channels. When 16 channels are used by the output full ratings (100mA per 1 channel), it is necessary to connect all.
ON-4/5	Connect the negative side of the external power supply. These pins are common to 16 channels output signal. One pin permissible current of the connector is 1A. Please connect necessary number of pins for the corresponding total current of the output 16 channels. When 16 channels are used by the output full ratings (100mA per 1 channel), it is necessary to connect all.
ON-6/7	Connect the negative side of the external power supply. These pins are common to 16 channels output signal. One pin permissible current of the connector is 1A. Please connect necessary number of pins for the corresponding total current of the output 16 channels. When 16 channels are used by the output full ratings (100mA per 1 channel), it is necessary to connect all.
N.C.	This pin is left unconnected.

## **⚠** CAUTION

To perform output using this product with the CONTEC device driver, specify logical ports and logical bits when calling each function. For details, refer to the "Relationships between API-TOOL Logical Ports/Bits and Connector Signal Pins" of Reference Manual.

### Pin Assignments of Optional Connector PCB96WS

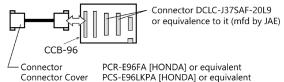
- Option cable PCB96WS-\*\*



CNA									CNB				
Common minus pin for +2/+3 output ports	ON- 2/3	20		1	ON- 0/1	Common minus pin for +0/+1 output ports	Common minus pin for +6/+7 output ports	ON- 6/7	20		1	ON- 4/5	Common minus pin for +4/+5 output ports
	O-20	21		2	O-00			0-60	21		2	0-40	
	0-21	22	20 1	3	O-01			0-61	22	20 1	3	0-41	
	0-22	23	1	4	O-02			0-62	23	1	4	0-42	
+2 port	0-23	24	000	5	O-03	+0 port	+6 port	0-63	24	000	5	O-43	+4 port
(Output)	0-24	25	0 0	6	0-04	(Output)	(Output)	0-64	25	0 0	6	0-44	(Output)
	O-25	26	000	7	O-05			O-65	26	000	7	O-45	
	O-26	27	00	8	O-06		(	O-66	27	0 0 8	8	0-46	
	O-27	28	000	9	O-07			0-67	28	000	9	0-47	
	O-30	29	0 0	10	O-10			O-70	29	00	10	O-50	
	0-31	30	000	11	0-11			0-71	30	00	11	O-51	
	O-32	31	00	12	0-12			0-72	31	00	12	O-52	
+3 port	O-33	32	0 0	13	O-13	+1 port	+7 port	0-73	32	0 0	13	O-53	+5 port
(Output)	0-34	33	0 0	14	0-14	(Output)	(Output)	0-74	33	00	14	0-54	(Output)
	O-35	34	99	15	0-15			0-75	34	(99)	15	O-55	
	O-36	35	37 19	16	0-16			0-76	35	37 19	16	O-56	
	O-37	36	5, 15	17	0-17			0-77	36	5, 15	17	O-57	
Common plus	OP-2/3	27		10	OP-0/1	Common plus	Common plus	OD 677	27		10	OP-4/5	Common plus
pin for +2/+3 output ports	OP-2/3	5/		18	OP-0/1	pin for +0/+1 output ports	pin for +6/+7 output ports	OP-6/7	5/		18	Or-4/5	pin for +4/+5 output ports
				19	N.C.						19	N.C.	

#### Pin Assignments of Optional Connector CCB-96

- "Optional cable PCB96PS" + "Connector conversion board CCB-96"



		C	N3(CN/	4)		
Common minus pin for +0/+1 output ports	ON- 0/1	1		20	ON- 2/3	Common minus pin for +2/+3 output port
	0-00	2		21	O-20	
	O-01	3	1 20	22	O-21	
	O-02	4	1	23	0-22	
+0 port	O-03	5	00	24	O-23	+2 port
(Output)	O-04	6	00	25	0-24	(Output)
	O-05	7	00	26	O-25	
	O-06	8	80	27	O-26	
	O-07	9	00	28	O-27	
	O-10	10	000000000000000000000000000000000000000	29	O-30	+3 port (Output)
	O-11	11		30	O-31	
	O-12	12		31	O-32	
+1 port	O-13	13		32	O-33	
(Output)	O-14	14		33	0-34	
	O-15	15		34	O-35	
	O-16	16	19 37	35	O-36	
	O-17	17	19 3/	36	O-37	
Common plus pin for +0/+1 output ports	OP- 0/1	18		37	OP- 2/3	Common plus pin for +2/+3 output port
	N.C.	19				

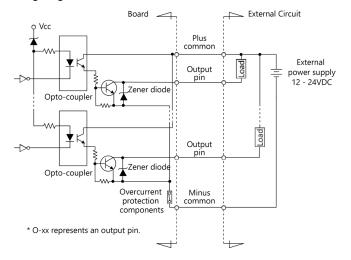
		C	N4(CNI	3)		
Common minus pin for +4/+5 output ports	ON- 4/5	1		20	ON- 6/7	Commo minus p for +6/+ output ports
	O-40	2		21	O-60	
	0-41	3	1 20	22	0-61	
	0-42	4		23	0-62	
+4 port	O-43	5	00	24	O-63	+6 por
(Output)	0-44	6	000000000000000000000000000000000000000	25	O-64	(Output)
	O-45	7	00	26	O-65	
	O-46	8	00	27	O-66	
	O-47	9	00	28	O-67	
	O-50	10	000	29	O-70	
	O-51	11	00	30	0-71	
	O-52	12	00	31	0-72	
+5 port	O-53	13	00	32	O-73	+7 por
(Output)	O-54	14	00	33	O-74	(Outpu
	O-55	15	ا ۾ ۾	34	O-75	
	O-56	16	19 37	35	O-76	
	O-57	17	19 3/	36	0-77	
Common plus pin for +4/+5 output ports	4/5	18		37	OP- 6/7	Commo plus pin t +6/+7 output ports
	N.C.	19				,,,,,,,,,

## **Connecting Output Signals**

### **Output Circuit**

Connect the output signals to a current-driven controlled device such as a relay or LED.

The connection requires an external power supply to feed currents. The product controls turning on/off the current-driven controlled device using a digital value.



The signal output section is an opto-coupler isolated, open-collector output (current sink type).

Driving the output section requires an external power supply.

The rated output current per channel is 100mA at maximum. The output section can also be connected to a TTL level input as it uses a low-saturated transistor for output.

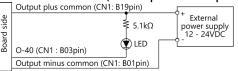
The residual voltage (low-level voltage) between the collector and emitter with the output on is 0.5V or less at an output current within 50mA or at most 1.0V at an output current within 100mA. A zener diode is connected to the output transistor for protection from surge voltages.

A overcurrent protection components is provided for every 8 output transistors.

### **∴** CAUTION

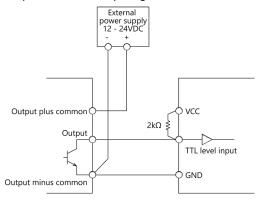
When the PC is turned on, all output are reset to OFF.

## Connection to the LED (An Example to use Output O-40)



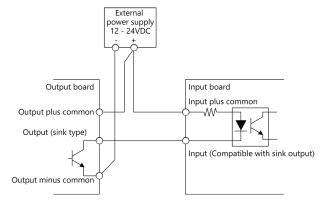
When "1" is output to a relevant bit, the corresponding LED comes on. When "0" is output to the bit, in contrast, the LED goes out.

# Example of Connection to TTL Level Input (Connection Example of Output and TTL level Input Signal)

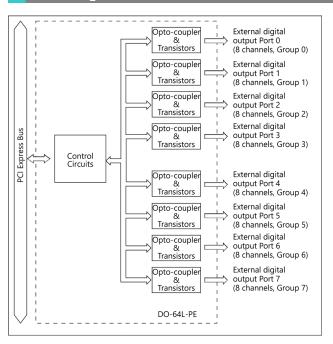


### Connecting the Sink Type Output and Sink Output Support Input

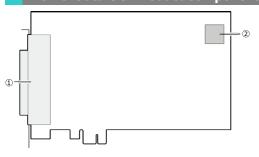
The following example shows a connection between a sink type output (output board) and a sink output support input (input board). Refer to this connection example when you connect such boards to each other.



## **Block Diagram**



# **Nomenclature of Product Components**



No.	Name
1	Interface Connector
2	Board ID Setting Switch

DO-64L-PE