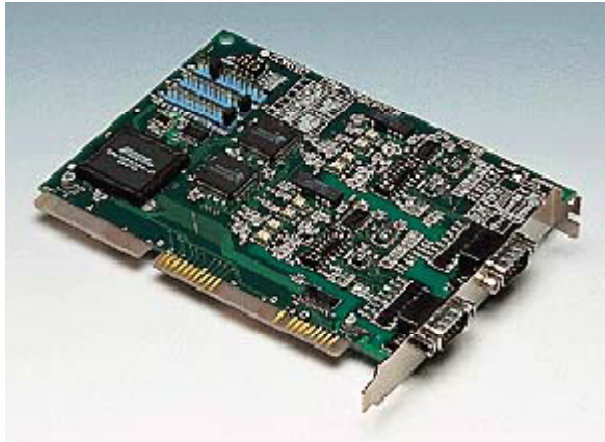


Opto-isolated RS-422/485 Interface Board COM-2PD(PC)H



This product is interface board external equipment, PC/AT which performs serial data transmission, and for the compatible machines. This board is used inserting in the expansion slot or I/O extension unit of the main part of a personal computer.

Features

- Transmission of the serial data of two channels can be performed on this one interface board.
- It has the serial I/O port of RS-422A/485 conformity 2ch.
- Setup of a transmission rate can be set up by software out of 50-921,600bps. Moreover, the transmission rate of channel 1 and channel 2 is independent, and can be set up.
- Serge protection of all the RS-422A/485 signal lines is carried out.
- Since it is insulated between channel 1 and channel 2 between the serial communication port and the personal computer, bad influences, such as a noise from the outside, are not received.

Packing List

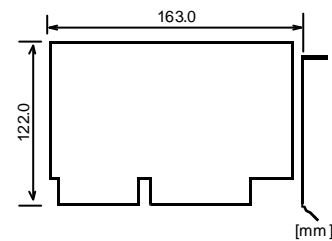
- COM-2PD(PC)H Board - 1
- Sample Program Diskette (3.5inch/1.44M B) - 1
- User's Guide (this booklet) - 1

Specification

| Item | Specification |
|-----------------------|---|
| Number of Channels | 2 |
| Input Type | RS-422A/485 (Isolation Type) |
| Isolation Voltage | 1000V Max. |
| Transfer Method | Asynchronous serial transfer (Full / Half Duplex) |
| Baud Rate | 50-921,600bps ¹ |
| Data Length | 5, 6, 7, 8 bits 1, 1.5, 2 stop bits ² |
| Parity check | Even, Odd, Non-parity ¹ |
| Controller Chip | NS16550 or equivalent |
| Distance | 1200m Max. |
| Interrupt Requests | IRQ3-7, 9-12, 14, 15 Enhanced mode: 1 level Compatible mode: 2 levels |
| I/O Address | 8 bits x 16 ports |
| Power Consumption | DC5V 480mA Max. |
| Operating Temperature | 0-60° C |
| Relative Humidity | 20-90% non-condensing |
| Dimensions | 160.0 x 122.0 x 18.5mm |
| Weight | 150g |

¹ Software programmable.

For details, see "Appendix B Notes on Developing Driver Software" or refer to the data sheet of the NS16550 or the equivalent chip.



Support Software

DDE Communication Driver Software

For Windows NT/98/95

: DDE SERVER(W32)

For PLC Windows 98(Win16)/95(Win16)/3.1

: DDE-PLC WIN

Driver software

For Windows 2000/NT/98/95

: API-PAC(W32)Ver.Apr.2000

For Windows 95(Win16)/3.1

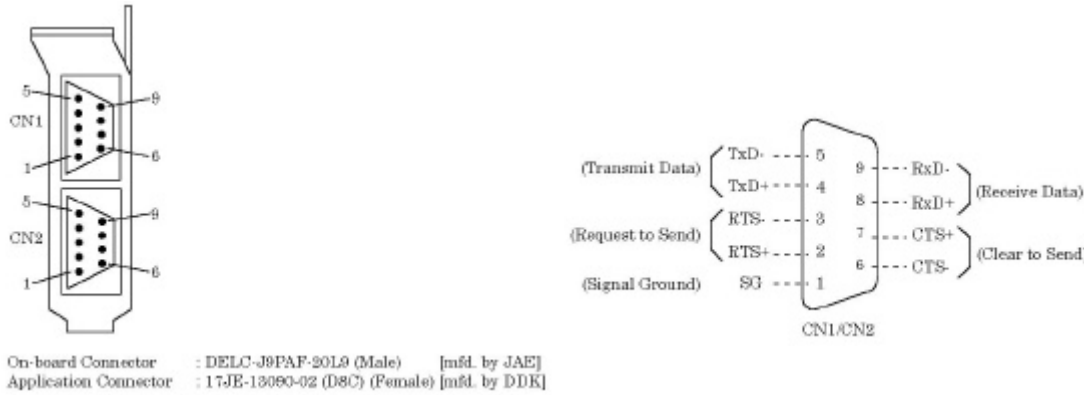
: API-SIO(PC)WIN

For MS-DOS

: SUPPORT-PAC(PC)103

External Connection

Connecting the COM-2PD(PC)H board to external devices is via two 9pin D-SUB connector (male) on the board.



Setup of Interrupt Level

Signal from LSI on board (NS16550 or equivalent) can be chosen by JP1, JP2, and JP3, and it can be used as interruption demand signal.

Note!

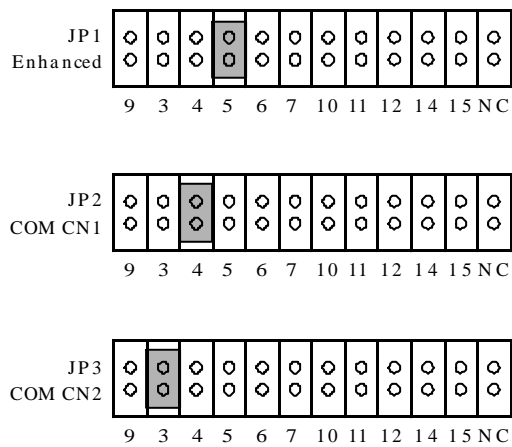
- When you use interruption, please set up not to overlap the interruption level currently used by other apparatus.

When not using interruption

Short connector is connected to NC pin of each jumper (JP1, JP2, JP3).

When using interruption

Interruption level is connected by the short connector attached to the jumper (JP1, JP2, JP3). Interruption levels which can be set up are IRQ 3-7, 9-12, 14 and 15.



When IRQ5 is shared by CN1 and CN2 by a diagram when it is set as enhanced mode by setup of I/O Address of SW1, and it is set as the compatible mode, it is setup for which CN1 uses IRQ4 and CN2 uses IRQ3.

Note!

- Please connect a short connector to NC pin in the jumper in the mode which is not used.

The example of setting of a general interruption level is shown with I/O Address of COM 1-COM 4 (compatible mode) in the following table.

| Port | I/O Address | Input Level |
|------|-------------|-------------|
| COM1 | 3F8-3FF | IRQ4 |
| COM2 | 2F8-2FF | IRQ3 |
| COM3 | 3E8-3EF | IRQ4 * |
| COM4 | 2E8-2EF | IRQ3 |

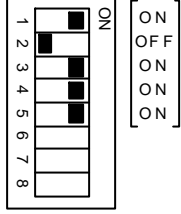
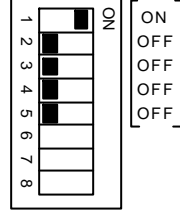
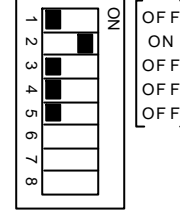
*1 On the IBM PS/55Z and similar, COM3 uses IRQ3.

Note!

- When setting the RS-232C port of the main part of a personal computer to COM1 and COM2 and using the board of our company four ports simultaneously as COM3 and COM4, since COM1 is using IRQ4 and COM2 are using IRQ3, it is necessary to set IRQ4 and interruption levels other than three as COM3 and COM4 by COM-2PD(PC)H.

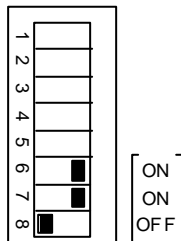
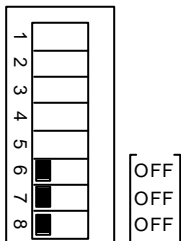
Setup of data transmission mode

Data-communications mode of a board is set up in the bits 1-5 of SW2 and SW3. SW2 is object for CN1, and SW3 is object for CN2. Among the following table, since [] corresponds to the silk on board, please refer to this and set up data-communications mode.

| Transmission Mode | Half Duplex | Full Duplex | |
|-----------------------|--|---|--|
| | | RTS and CTS are not used [RTS →] [CTS ←] | Connect RTS and CTS to the other unit [RTS →] [CTS ←] |
| Setting SW 2 and SW 3 |  <p style="text-align: center;">SW2, SW3</p> <p style="font-size: small;">TXD is only used for data transmission; the sending and receiving modes should be switched over using the modem control register.</p> |  <p style="text-align: center;">SW2, SW3</p> <p style="font-size: small;">RTS of this port of the other unit should be active to receive signals from it.</p> |  <p style="text-align: center;">SW 2, SW3</p> <p style="font-size: small;">CTS of this port of the other unit should be active to send signals to it.</p> |

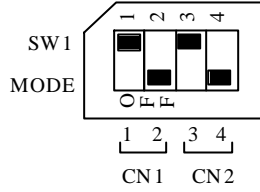
Setup of terminator

Insertion existence of a terminator is set up in the bits 6 and 7 of SW2 and SW3. SW2 is object for CN1, and SW3 is object for CN2. Since [] in the following table corresponds to the silk on board, please refer to this and set up a terminator.(Please always use a bits 8 in OFF.)

| Insertion of Terminator | Inserted | Not Inserted |
|-------------------------|--|---|
| How to Set (SW2, SW3) |  <p style="text-align: center;">SW2, SW3</p> <p style="font-size: small;">Figure 3.5. A or D (Both Terminators of the Line)</p> |  <p style="text-align: center;">SW2, SW3</p> <p style="font-size: small;">Figure 3.5. B or C (Other than both Terminators of the Line)</p> |

Setup of I/O Address

I/O Address is set up with the DIP switch on board (SW1).

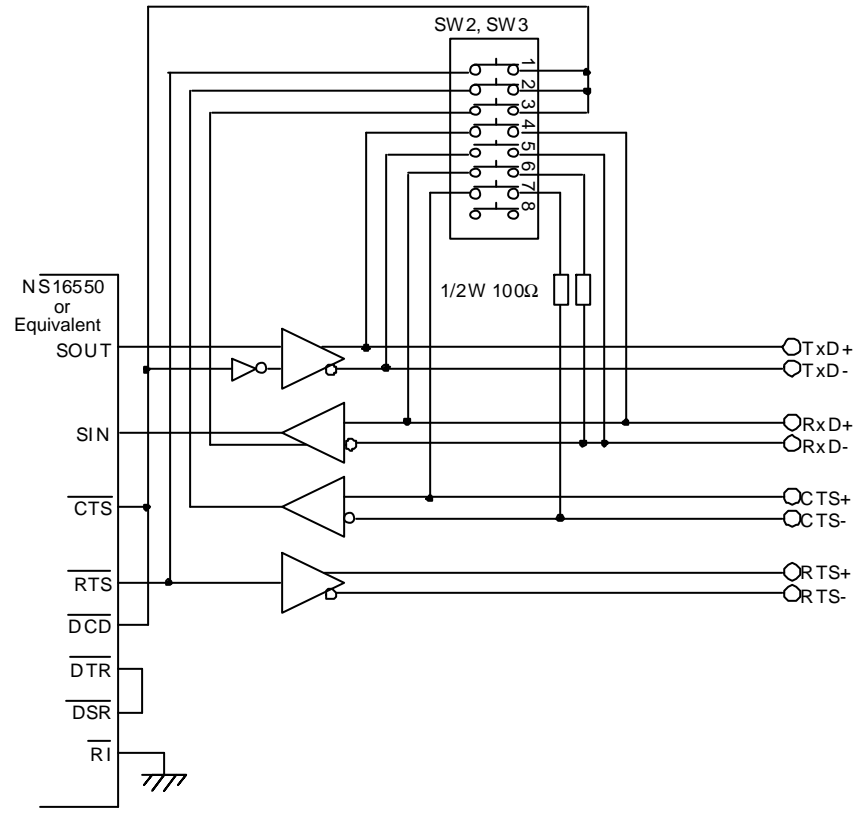


| | SW1 | | Function | I/O Address | Interrupt Vector Register Address |
|-----|-------|-------|----------|-------------|-----------------------------------|
| | Bit 1 | Bit 2 | | | |
| CN1 | ON | ON | Enhanced | 1A0~1A7 | 1BF |
| | | OFF | Enhanced | 2A0~2A7 | 2BF |
| | OFF | ON | COM3 | 3E8~3EF | - |
| | | OFF | COM1 | 3F8~3FF | - |

| | SW1 | | Function | I/O Address | Interrupt Vector Register Address |
|-----|-------|-------|----------|-------------|-----------------------------------|
| | Bit 3 | Bit 4 | | | |
| CN2 | ON | ON | Enhanced | 1A8~1AF | 1BF |
| | | OFF | Enhanced | 2A8~2AF | 2BF |
| | OFF | ON | COM4 | 2E8~2EF | - |
| | | OFF | COM2 | 2F8~2FF | - |

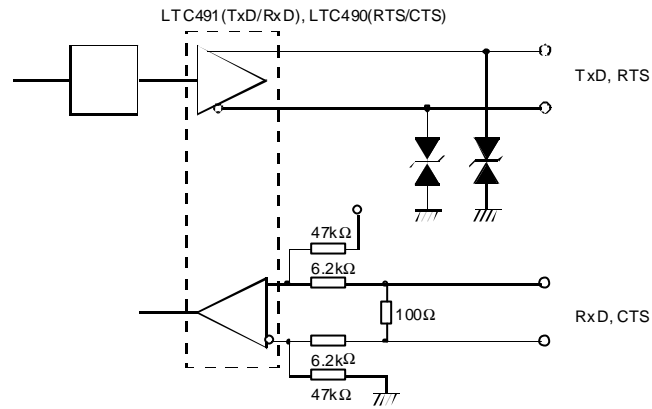
By a diagram, the head I/O Address of CN1 is set as 2A0H, and the head I/O Address of CN2 is set as 2A8H.

External I/O Circuit

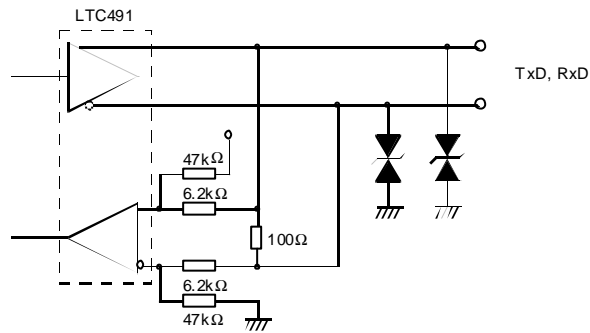


Equivalent circuit

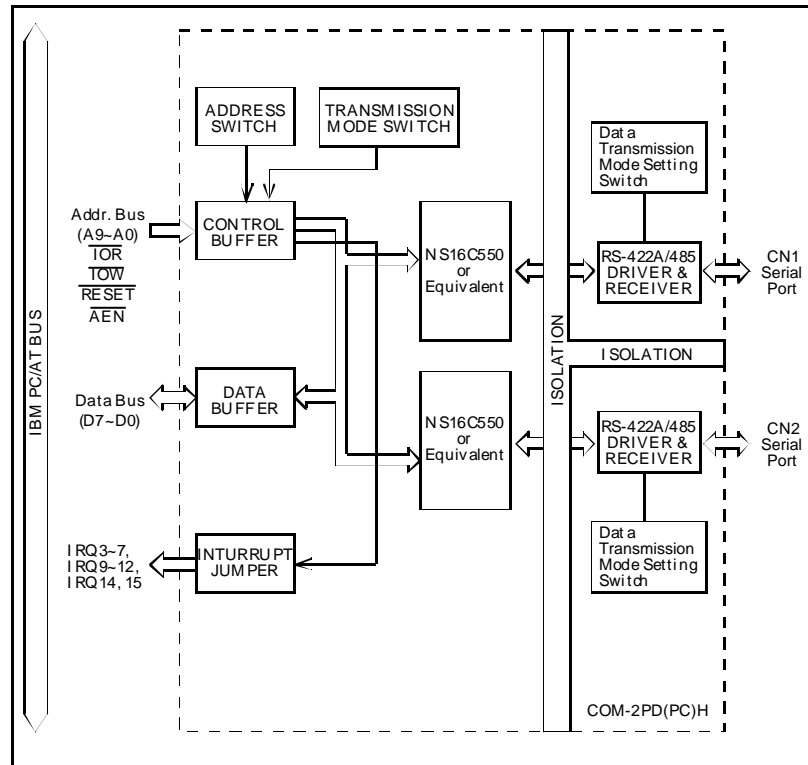
Equivalent circuit at the time of RS-422A/485 full-duplex setup



Equivalent circuit at the time of RS-422A/485 half-double setup



Block Diagram



Difference between COM-2PD (PC) and COM-2PD (PC) H

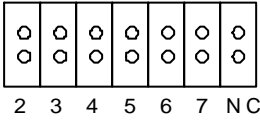
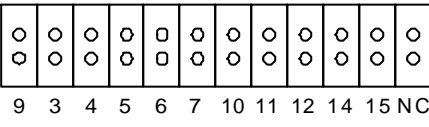
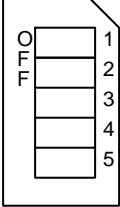
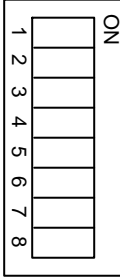
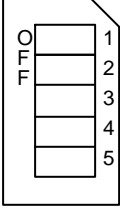
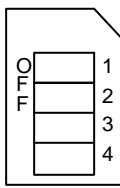
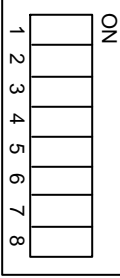
COM-2PD(PC)H is the products which improved conventional COM-2PD(PC) in part, and is the higher rank compatible article of COM-2PD(PC). Therefore, the same usage as COM-2PD(PC) can be done fundamentally.

However, since bus specification changes to AT bus from XT bus and board sizes differ, it may be unable to mount in a personal computer. Please use it after checking beforehand the board size which can be mounted in a personal computer. Moreover, there is difference in specification and hardware setup. The difference is shown below.

Difference in specification

| | COM-2PD(PC) | COM-2PD(PC)H |
|----------------------------|----------------------------------|---|
| Bus | XT Bus | AT Bus |
| Baud Rate | 50~115,200bps | 50~921,600bps |
| Interrupt Level | IRQ3~7, 9 (Jumper Selectable) | IRQ3~7, 9~12, 14, 15 (Jumper Selectable) |
| Dimensions | 120.0 x 107.0 x 18.5mm | 160.0 x 122.0 x 18.5mm |
| Isolation for the channels | not performed | performed |

Difference in hardware

| | COM-2PD(PC) | COM-2PD(PC)H |
|---------------------------|--|--|
| Interrupt Setting |  <p>JP1~JP3 2 3 4 5 6 7 NC (Jumper Selectable)</p> |  <p>JP1~JP3 9 3 4 5 6 7 10 11 12 14 15 NC (Jumper Selectable)</p> |
| Transmission Mode Setting |  <p>SW3 (Transmission Mode Setting for CH1)</p> |  <p>SW2 (Transmission Mode and Terminator Setting for CN1)</p> |
| Terminator Setting |  <p>SW4 (Transmission Mode Setting for CH2)</p>  <p>SW2 (Terminator Setting for CH1 and CH2)</p> |  <p>SW3 (Transmission Mode and Terminator Setting for CN2)</p> |