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Cable / Processor Pinouts

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Summary

Cable / Processor Pinouts

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- What is the pinout for my communications port on my processor / HMI device?

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- 1771-CN/CO/CR

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Answer

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- When to use a straight thru serial vs null modem serial cable
- MicroLogix 1400 Channel 2 port
- PanelView Plus DH+/DH-485/RIO / 2711P-RN6
- IMC12x Serial Cable

2711-NC1

The 2711-NC1 is no longer available. Replacement options include:

- Using a 1784-CP10 cable with a 9 pin null modem adapter.

- Building a cable per the pin-out below:

25-pin	9-pin
1 - Shield	Not Connected
2 - TXD	3 - TXD
3 - RXD	2 - RXD
4 - CTS	7 - RTS
5 - RTS	8 - CTS
6 - DTR	6 - DSR
7 - COMMON	5 - COMMON
8 - DCD	1 - DCD
20 - DSR	4 - DTR

2706-NC13 / 2711-NC13 / 2711-NC14 / Straight-thru DB9 Serial

Note: The following cables are interchangeable

- <u>2706-NC13</u> 10.0 feet (3 meter)
- <u>2711-NC13</u> 16.4 feet (5 meter)
- <u>2711-NC14</u> 32.7 feet (10 meter)

9 pin female D-shell connector on both ends of cable

1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	Not connected at either end

2711-NC21 / 2711-NC22

- <u>2711-NC21</u> - 5 meters (16.4 feet)
- <u>2711-NC22</u> - 15 meters (49.2 feet)

8-pin mini din	9-pin D-shell
1	Not connected
2	5
3	8
4	2
5	1
6	7
7	3
8	Not connected
Not connected	4 (connected to 6 on this end)
Not connected	6 (connected to 4 on this end)
Not connected	9
Shield	Shield

1761-CBL-HM02/05/10 / 1761-CBL-AM00 / 2707-NC11 / 2707-NC9

- 1761-CBL-HM02 (2 meters/6.5 feet)
- 1761-CBL-HM05 (5 meters/16.4 feet)
- 1761-CBL-HM10 (10 meters/32.7 feet)
- 1761-CBL-AM00 (45 centimeters/17.7 inches)

Pin	Pin
1	1
2	2
3	6
4	7
5	5
6	3
7	4
8	8

1761-CBL-PM02 / 2711-CBL-PM05/10 / 1761-CBL-AP00 / 2711-CBL-PH02 / 2707-NC8

- 1761-CBL-AP00 (45 centimeters/17.7 inches)
- 1761-CBL-PM02 (2 meters/6.5 feet)

- 2711-CBL-PM05 (5 meters/16.4 feet)
- 2711-CBL-PM10 (10 meters/32.7 feet)
- 2711-CBL-PH02 (2 meters/6.5 feet)
- 2707-NC8 (2 meters/6.5 feet)

9-pin	8-pin
9	Not connected
8	3
7	6
6 (connected to 4 on this end)	
5	2
4 (connected to 6 on this end)	
3	4
2	7
1	5

1761-CBL-AS03 / 1761-CBL-AS09

IMPORTANT NOTE: This cable is to be used only to connect one device to the AIC+. It is not designed as a daisy chain connection to the DH-485 network.

RJ45 Pin Number	Signal Name	Phoenix Pin Number	Signal Name
1	CH B	4	B
2	CH A	5 (5 and 6 are jumpered together on this end)	A
		6 (5 and 6 are jumpered together on this end)	TERM
3	+24		
4	SIG GND	3	SIG GND
5	TX-EN	Not connected	
6	CHS GND		
		1 (pin 1 and 2 are jumpered together on this end)	CHS GND
7	SIG GND		SIG GND
8	+24		
SHIELD	Not connected	2 (pin 1 and 2 are jumpered together on this end)	SHIELD

If the RS-485 port, of the device being connected, is non-isolated, you are NOT allowed to daisy-chain from this cable configuration. This would place the connected devices non-isolated port directly on to the Data Highway-485 network cable and potentially cause damage to the device connected to port 3 of the AIC+.

1747-C10 / 1747-C11 / 1747-C13* / 1747-C20

P1	Color	Function	P2
1	Red	Ch. B TX/RC	1
2	Black	Ch. A TX/RC	2
3	Brown	+24 VDC	3
4	White	SIGNAL GND	4
5	Blue	TX-EN	5
6	Drain	EARTH GND	6
7	Green	SIGNAL GND	7
8	Orange	+24 VDC	8

*IMPORTANT NOTE: On the 1747-C13 Cable, the DRAIN and BROWN are missing.

1747-CP3 / Null modem DB9 Serial

- 1747-CP3 (3 meters/10 feet)
- 1761-CBL-AC00 (45 centimeters/17.7 inches)
- 1756-CP3

9-pin D-shell	9-pin D-shell
1 (jumpered to 6 on this end)	1 (jumpered to 6 on this end)
2	3
3	2
4	6 (jumpered to 1 on this end)
5	5
6 (jumpered to 1 on this end)	4
7	8
8	7
9	9

1784-CP6

62-pin D-shell	8-pin mini din
36 - Clear	6
35 - Shield	3
34 - Blue	1

1784-CP7 / 1784-PCM6

9-pin D-shell	8-pin mini din
7 - Shield	3
5 - Blue	1
1 - Clear	6

Can I use 1784-CP7 as 8-pin to 9-pin adapter for MicroLogix 8-pin mini din port?

No. The 1784-CP7 is used for Data Highway Plus.

1784-CP10

Female 9-pin	Male 25-pin
2	2
5	7
3	3
4 (tied to 6 on this end	4 (tied to 5 on this end)
6 (tied to 4 on this end)	5 (tied to 4 on this end)
7 (tied to 8 on this end)	6 (tied to 8 and 20 on this end)
8 (tied to 7 on this end)	8 (tied to 6 and 20 on this end)
	20 (tied to 6 and 8 on this end)

1784-CP12

Used for communicating to PLC5/10,-5/15,-5/25 and PLC -5/250 classic programmable controllers. **NOTE: This cable is no longer being made.**

3-pin Phoenix	9-pin D-shell
1 - DH+ Clear	1 - DH+ Clear
2 - DH+ Shield	7 - DH+ Shield
3 - DH+ Blue	5 - DH+ Blue

1784-CP13

Used for communicating to PLC -5/11,-5/20,-5/30,-5/40,-5/60,-5/80, enhanced programmable controllers and SLC 5/04 processors. **NOTE: This cable is no longer being made.**

3-pin Phoenix	8-pin mini din
1 - DH+ Clear	6 - DH+ Clear
2 - DH+ Shield	3 - DH+ Shield
3 - DH+ Blue	1 - DH+ Blue

1784-CP14 (DH-485 Smart cable)

The 1784-CP14 smart cable has a 6-pin phoenix style connector on one end and an RJ45 connector on the other. This cable is used to connect the KTX or KTX(D) to the front port of the SLC with the RJ45 DH-485 port.

This cable does NOT work through an AIC module nor a 1785-KA5. The cable is designed to work to the processor front port.

6-pin Phoenix	8-pin RJ45
1	7
2	6
4	1
5	2
6	Not connected

1784-CP15

Used to communicate to PLC-2 via a direct connect.

8-pin RJ11	15-pin D-shell
1	1
3	2
2	3
8	4
4	5
5	6
7	7
6	8

1784-CP16

Used to communicate to PLC-3 via a direct connect.

8-pin RJ11	25-pin D-shell
5	3
4	18
1	25
3	14
Not Connected	1

Blue Hose (Data Highway Plus)

Belden 9463 Blue Hose Cable	
1 - Clear	1 - Clear
2 - Shield	Not Connected

3 - Blue	2 - Blue

Ethernet CAT5 Cable

Computers / Laptops should be connected to hubs with a straight-through cable. When making connections to the HUB, either the Computer / Laptop, or the HUB must be powered down or erratic network operation may result.

Ethernet Twisted Pair Wiring Information (RH45)	
1	White with Orange Stripe
2	Orange
3	White with Green Stripe
4	Blue
5	White with Blue Stripe
6	Green
7	White with Brown Stripe
8	Brown

NOTE: Wire #4, 5, 7 and 8 are not used but connected straight-through.

Straight-through Cable Wiring	
1	1
2	2
3	3
6	6

Crossed Cable Wiring (also known as 2711-CBL-EX04)	
1	3
2	6
3	1
6	2

Connecting directly from one Ethernet device to another without a hub/switch

It is possible to connect two Ethernet devices DIRECTLY to each other by using an Ethernet Cross-over cable. For the pinout, see the Crossed Cable Wiring table above.

2711C-CBL-AB03

- 2711C-CBL-AB03 (2 meters)

This cable is used from the terminal block RS-485 connector on the PanelView Component to the DH-485 port of the SLC 500, 5/01, 5/02 and 5/03.

Terminal Block	RJ45
1 - TX (jumpered to pin 3)	1 - Data
2 - TX- (jumpered to pin 4)	2 - Data-
3 - RX (jumpered to pin 1)	3 - Not Connected
4 - RX- (jumpered to pin 2)	4 - Not Connected
5 - Shield	6 - Shield
	5 - TX-EN (Not Connected)
	7 - COM (Not Connected
	8 - Not Connected

1784-CAS

The 1784-CAS connects the serial port on a PC to the BCL/direct connect/Channel 0 port on the PLC-3.

Computer Serial Port 25 pin female	PLC-3 Channel 0/5 25 pin male
Frame Gnd	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
20	20

If your computer has a 9 pin serial port, the following pin-out should be equivalent.

Computer Serial Port 9 pin female	PLC-3 Channel 0/5 25 pin male
Frame Gnd	1
3	2
2	3
7	4
8	5
6	6
5	7
1	8
4	20

1784-PCM5

9 pin D-shell

9	Not Connected
8	Not Connected
7	Shield
6	Not Connected
5	Blue
4	Not Connected
3	Not Connected
2	Not Connected
1	Clear

1770-KFD serial cable

The RS-232 cable that is included with the 1770-KFD is a 6 foot 9 pin D-shell female-to-female cable.

KFD End	Host End
1	4
2	3
3	2
4	1
5	5
6	1
7 (jumpered to pin 8 on this end)	7 (jumpered to pin 8 on this end)
8 (jumpered to pin 7 on this end)	8 (jumpered to pin 7 on this end)
9	Not Connected

25-pin to 9-pin Serial Adapter

9-ping	25-pin
1 - DCD	8
2 - RXD	3
3 - TXD	2
4 - DTR	20
5 - COM	7
6 - DSR	6
7 - RTS	4
8 - CTS	5
9 - RI	22

PLC5 25-pin (Channel 0)

The required cable is the 1784-CP10

Using 1761-NET-ENI to Connect to PLC5 Channel 0

1. You will need proper cables:
    - 1784-CP10 (This is the PLC5 serial cable).
    - 1761-CBL-PM02 (This is the NET_ENI serial cable).
    - A gender changer to connect 2 female 9 pin D shell plugs. This is to connect the two cables together.
2. Make sure to set the serial port in PLC5 for 19200 baud, DF1 full duplex, with error checking set to CRC and No handshaking for Control line.
3. Make sure the NET-ENI baud rate is also set to 19200 or to AUTO.

1761-NET-ENI(W) using the ENI Utility

ENI IP Addr tab:

ENI Series B: Not marked

232 Baud Rate: 19,200

ENI IP Address: 130.200.180.7

Subnet Mask: 255.255.255.0

Obtain via BootP: Not required

Message Routing:

Not required

PLC5 Channel 0 Configuration:

Communication Mode: System (Point-To-Point)

Serial Port:

Baud Rate: 19.2K

Bits Per Char: 8

Stop Bits: 1

Parity: None

Error Detect: CRC

Control Line: No Handshaking

NOTE: Make sure to use the Ethernet Devices driver (AB_ETH-1) in RSLinx instead of the Ethernet/IP Driver (AB_ETHIP-1).

The RSWho window should show a PLC5 icon. If the ENI is not connected appropriately to the PLC5, the icon shown by RSLinx will be the one of the ENI.

PLC5 AUI Port

A frequent customer request is for the pin-outs from a 10BASET RJ 45 connector to the 15 pin AUI connector.

The answer is, there are no 'pin-outs' - to connect 10BASET to an AUI port, a transceiver is required. There are active components in the transceiver.

AB part number 1785-TR10BT will work (no longer sold). NOTE: A third party named BlackBox has several types of Ethernet transceivers still available. The 1785TR10BT equivalent appears to be the LE180A which is a 10BASE-T to AUI Transceiver that connects legacy Ethernet devices to 10BASE-T Ethernet.

1770-KF2

The pin layout for the 15-pin Data Highway Plus connector on a 1770-KF2 module is:

Pin 6 - Blue
Pin 7 - Shield
Pin 8 - Clear

PanelView Standard DF1 / DH485 Serial

PanelView to MicroLogix DF1 / DH485

For direct connection, use the following with **MicroLogix 1000, 1100, 1200, 1500-LSP**:

2711-NC21 (PanelView except 300 Micro)	DB-9 to MicroLogix (8-pin mini din)	AIC+ Port 2
2711-NC22 (PanelView except 300 Micro)	DB-9 to MicroLogix (8-pin mini din)	AIC+ Port 2

For direct connection, use the following with MicroLogix 1500-LRP:

Use a direct connection when both the PanelView (non 300 Micro) and MicroLogix use the same power supply. Otherwise, use the AIC for electrical isolation.

- 2711-NC13 (16.4 feet)
- 2711-NC14 (32.8 feet)

Use 1761-CBL-HM02 or one of its equivalents for PanelView 300 Micro terminals:

- 1761-CBL-HM02

Use the following from **PanelView to 1761-NET-AIC**

- 2711-NC13 (16.4 feet)
- 2711-NC14 (32.8 feet)

And the following from **1761-Net-AIC to MicroLogix** serial port:

- 1761-CBL-HM02 (6.56 feet)

RJ45 / DH-485 (all devices)

The pin-out for the RJ45/DH-485 port on all AB communication devices is shown below.

1	CH–B TX/RC	Red
2	CH–A TX/RC	Black
3	+24 VDC	Brown
4	SIG GND	White
5	TX-EN	Blue
6	CHS GND	Drain
7	SIG GND	Green
8	+24 VDC	Orange

When to use a straight thru serial vs null modem serial cable

To determine whether you should use a straight thru cable or a null modem cable, you need to determine whether the device has a Data Terminal Equipment (DTE) or Data Communication Equipment (DCE) interface.

Data Terminal Equipment

1. SLC/PLC5/Logix Family (Channel 0)
2. COMPUTER COM ports

It is advantageous for the serial port to be DTE because a connection to an ASCII device requires only a straight thru cable. On a DTE device (with DB9 connector); **TX = 2, RX = 3**

Data Communication Equipment

1. Modems, Printers
2. DF1 PanelViews = 2711-xxx16, -xxx17
3. DH-485 (RS-232) PanelViews = 2711-xxx5, -xxx9

On a DCE device (with DB9 connector); TX = 3, RX = 2

Cable Requirements

- To connect a DTE device to DTE device a null modem cable is needed.
- To connect a DTE device to DCE device a straight thru cable is needed.
- To connect a DCE device to DCE device a null modem cable is needed

A PanelView requires a straight thru cable to upload/download/go online from a computer COM port. A SLC/PLC5 (channel 0) requires a null modem cable to upload/download/go online from a computer COM port.

IBM XT DB-25	Description	Direction
TXD 2	Transmit Data	output
RXD 3	Receive Data	input

RTS 4	Request to Send	output to DCE
CTS 5	Clear to Send	input from DCE
DSR 6	Data Set Ready (DCE ready)	input from DCE
GND 7	Signal Ground	
DCD 8	Data Carrier Detect	
DTR 20	Data Terminal Ready (DTE ready)	output to DCE

IBM AT DB-9
TXD 3
RXD 2
RTS 7
CTS 8
DSR 6
GND 5
DCD 1
DTR 4

MicroLogix 1400 Channel 2 port

MicroLogix 1400 Channel 2 (9-pin, D-shell connector) pin-outs:

1	CD
2	RXD
3	TXD
4	DTR (linked with pin 6)
5	GND
6	DSR (linked with pin 4)
7	RTS
8	CTS
9	Not Connected

PanelView Plus DH+/DH-485/RIO / 2711P-RN6

Data Highway 485 (DH-485)

1	Earth / Ground
2	Shield / Drain
3	Signal Ground
4	Channel B
5	Channel A
6	Termination Resistance

Data Highway Plus

3	Blue
2	Shield / Drain
1	Clear

Remote I/O

3	Clear
2	Shield / Drain
1	Blue

IMC12x Serial Cable

The following is the pin-out for the RS-232 cable for connecting between the RS-232 port on a IMC12x product and the COM port on a PC.

9-pin to 9-pin	
2	3
3	2
7	5

9-pin to 25-pin	
2	2
3	3
7	7

1763-NC01

8-pin mini din	6-pin phoenix
1	B
2	COM
3	Not Connected
4	Not Connected
5	Not Connected

6	Not Connected
7	Not Connected
8	A

1784-CP2

This cable is used to connect the 15-pin PLC2 to a 62-pin Industrial Terminal port.

62-pin PLC2	15-pin Industrial Terminal
4	1
5	2
7	3
6	4
26	5
27	6
47	7
48	8

1784-PCM2

This is the direct connect cable for the PLC2 15-pin D-SUB connector.

Wire Color	Pin Number
Red	1
Black	2
Green	3
Black	4
Blue	5
Black	6
White	7
Black	8
16 AWG Wire	Drain

1784-PCM4

DH-485 Connector

Wire Color	Pin Number
Red	1 (Signal B)
White	2 (Signal A)
Yellow	5 (Transmit Enable)
Drain	6 (Shield)

Black	7 (Signal Ground)

2727-TRC1 MobileView download cable

NOTE: This is NOT the same pin-out as a PM02 or a 2711-NC21.

9-pin	8-pin
1	1
2	3
3	5
4	7
5	4
6 (jumpered to pin 1)	
7	2
8	6
9	Not Connected

2711-NC17

The 2711-NC17 assembly provides remote access to the 9 pin serial port for a PanelView 1400e/1000e Series F or later terminal.

1 - DCD	1
2 - TXD	2
3 - RXD	3
4 - DSR	4
5 - COM	5
6 - DTR	6
7 - CTS	7
8 - RTS	8
9 - Not Connected	9 - Not Connected

PanelView Standard Serial Modbus

PanelView 9-pin	Modbus 9-pin
2	3
3	2
4	5
1, 4, 6	4, 6
7, 8	7, 8

1772-TC

15-pin cable connecting to the PLC-2 communication port.

1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
Not Connected	9

1771-CN/CO/CR

The 1771-CN, 1771-CO and 1771-CR cables all share the same pin-out, they differ only in length. (15-pin to 15-pin D-Shell)

1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9 - Not Connected	9 - Not Connected
10	10
11	11
12	12
13	13
14	14
15	15

1772-TH (25-pin to 25-pin)

1 - Not Connected	1 - Not Connected
2	3
3	2
4	8
5	20

9	9
7	7
8	4
11	11
16	16
17	17
18	18
19	19
20	5
21	21

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