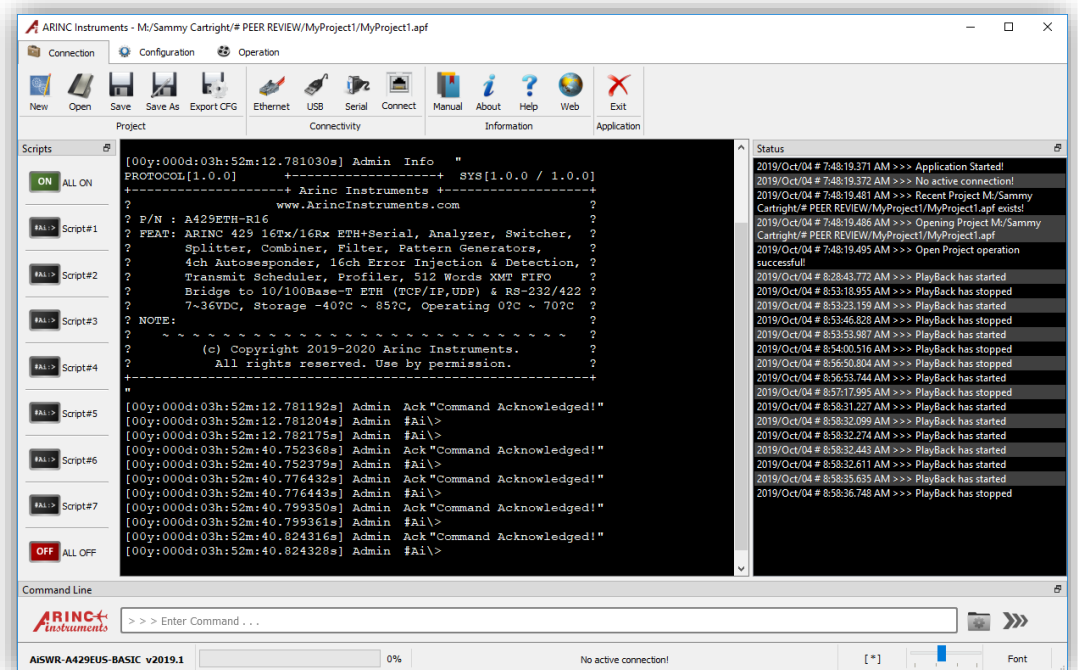


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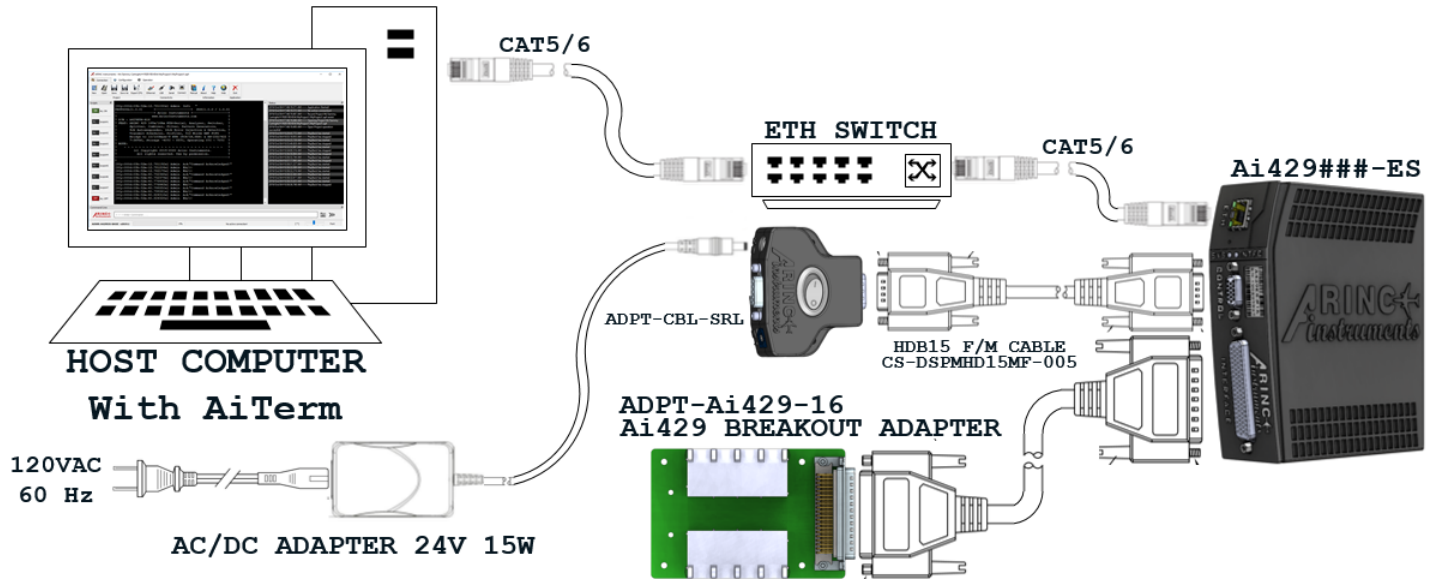
Ai429 Serial Model Getting Started Guide



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Ai429 Serial Model Ethernet Setup

We will setup the Ethernet arrangement as shown below. It is assumed that the user has a host computer with the AiTerm (or some other terminal emulator program) already installed.



REQUIRED ITEMS

- ITEM #1.** A computer with the AiTerm (or some other terminal emulator program) application installed – to be used as host platform.
- ITEM #2.** One Ethernet switch/hub.
- ITEM #3.** Two CAT5/6 Ethernet cables.
- ITEM #4.** One AC/DC 24VDC Adapter – PSAA15W-240L6
- ITEM #5.** One serial cable adapter module – ADPT-CBL-SRL
- ITEM #6.** One HD15 Male/Female cable – CS-DSPMHD15MF-*
- ITEM #7.** One Ai429###-ES## Serial device model (Ai429{class}-EU{channels})
- ITEM #8.** One *optional* breakout adapter – ADPT-Ai429-16
- ITEM #9.** One *optional* HD78 Male/Female cable – CS-DSDHD78MF0-*

REQUIRED SETUP

- STEP #1.** On the serial cable adapter (ADPT-CBL-SRL) module, set the device's mode to ADMIN by turning the hex switch to position zero.
- STEP #2.** Connect the device to the Ethernet switch using a CAT5/6 cable as shown above.
- STEP #3.** Connect the host computer the Ethernet using a CAT5/6 cable as shown above.
- STEP #4.** Connect the HD15 cable to the device's Control port.
- STEP #5.** Connect the HD15 cable to the serial cable adapter module.
- STEP #6.** Connect the power adapter barrel connector to the cable adapter (ADPT-CBL-SRL) power connector.
- STEP #7.** Connect the AC/DC power adapter to the AC outlet.
- STEP #8.** Decide which mode the device will operate (**Admin/Host**):
 - a. Set the front panel configuration switch to zero/0 for **Ethernet Admin mode**.
 - b. Set the front panel configuration switch to one/1 for **Ethernet Host mode**.
- STEP #9.** **Optionally** connect the HD78 cable to the Ai429 Interface port
- STEP #10.** **Optionally** connect the HD78 cable to the breakout adapter (ADPT-Ai429-16)
- STEP #11.** Connect the AC/DC power adapter to the 120VAC outlet.

Ai429 Embedded Web Server Setup

All Ai429 devices comes with an embedded web server that provides device status and the ability to configure the basic network parameters. By default, the web server uses HTML pages and can be accessed via any web browser by navigating to the IP address: 192.168.1.10:80

The screenshot shows the ARINC Instruments web interface. At the top, there is a navigation menu with 'Information' selected. Below the menu, the word 'INFORMATION' is displayed in large letters. The main content area is titled 'Current Settings' and contains a table of device information:

Version	2.08 - 2.09
Serial Number	13255
MAC Address	70-b3-d5-ef-40-25
IP Address	192.168.1.10
Subnet Mask	255.255.255.0
Gateway	192.168.1.1

Below the settings table, two device models are shown side-by-side. The left device is labeled 'SERIAL MODEL' and features an Ethernet port (ETH), a system status indicator (SYS), an interface control port (INTFC), a control port (CONTROL), and a large multi-pin interface port (INTERFACE). The right device is labeled 'USB MODEL' and features an Ethernet port (ETH), a system status indicator (SYS), an interface control port (INTFC), a configuration port (CFG), a USB port, a power port (PWR), and a large multi-pin interface port (INTERFACE). Both devices have a label with a barcode and the text 'A429ES-R16 S/N 190299999'.


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Ai429 Serial Model AiTerm Ethernet Startup

To startup the device, it must first be properly setup in accordance to its model. Please review and follow the appropriate setup section for your device model.

☞ Launch the AiTerm application.




☞ In AiTerm application, create a new project by clicking New Project button () in the Main tab.

☞ Using the dialog window, browse to the desired project location and click okay.

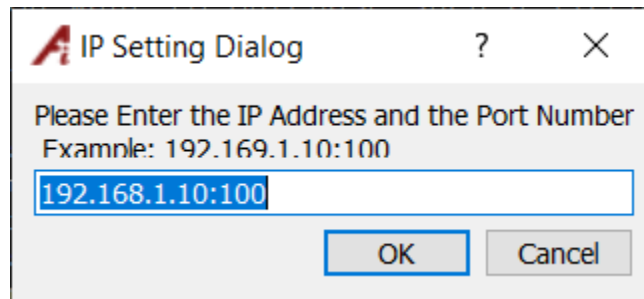
☞ Enter the new project's name and click okay – the project is created.

☞ If the network has DHCP, then the user must know the **IP address assigned to the device**. This is usually done either by forcing the switch to provide a fix IP address per physical port/connection, or by logging in and looking at the assigned IP table. Otherwise, in the absence of DHCP, the default device IP address is **192.168.1.10:100**.



☞ Click on the Ethernet button  under the Connection tab.

☞ A dialog windows is presented asking for the device's IP address.



☞ Enter the IP address and the port number separated by a colon with no spaces. For example: **192.168.1.10:100**

☞ Hit ENTER or click the OK button.

☞ The Connect button icon changes to an RJ-45 outlet.

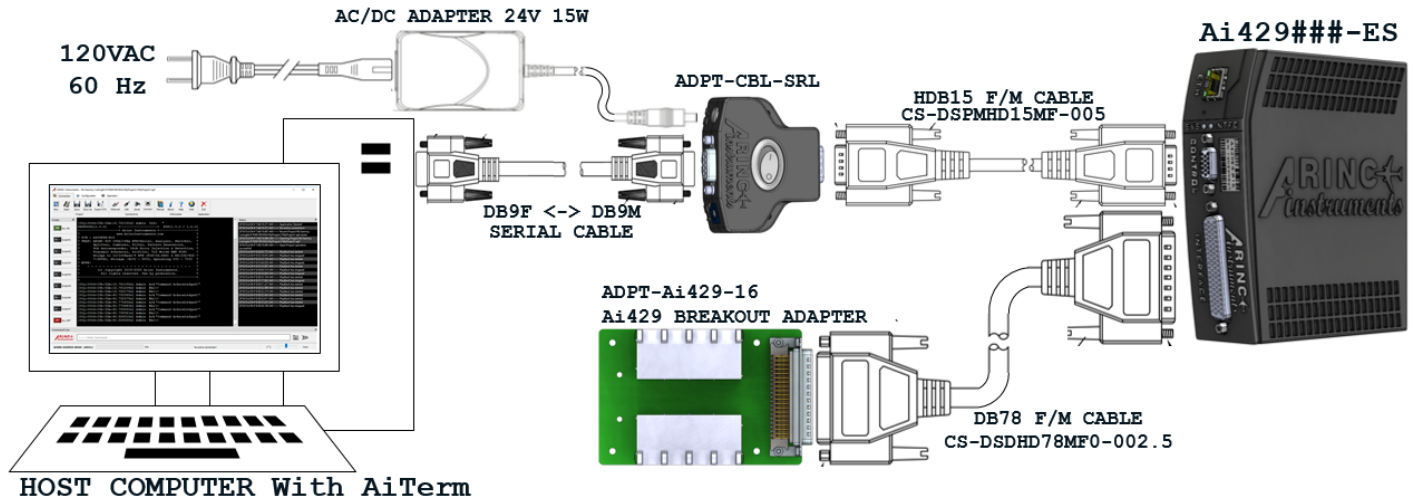
☞ Click on the Connect button.

☞ This should take anywhere from a few seconds to a few minutes depending on the nature of the network.

☞ Once connection is established, the device's information will be printed on the AiTerm console screen.

Ai429 Serial Model Serial Setup

We will setup the serial arrangement as shown below. It is assumed that the user has a host computer with the AiTerm (or some other terminal emulator program) and the USB driver already installed.



REQUIRED ITEMS

- ITEM #1.** A computer with the AiTerm application installed – to be used as host.
- ITEM #2.** FTDI VCOM USB Driver (Depending on the host platform)
- ITEM #3.** One mini USB 2.0 cable.
- ITEM #4.** One AC/DC 24VDC Adapter – PSAA15W-240L6
- ITEM #5.** One Ai429###-EU## USB device model (Ai429{class}-EU{channels})
- ITEM #6.** One optional breakout adapter – ADPT-Ai429-16
- ITEM #7.** One optional HD78 M/F cable – CS-DSDHD78MF0-*

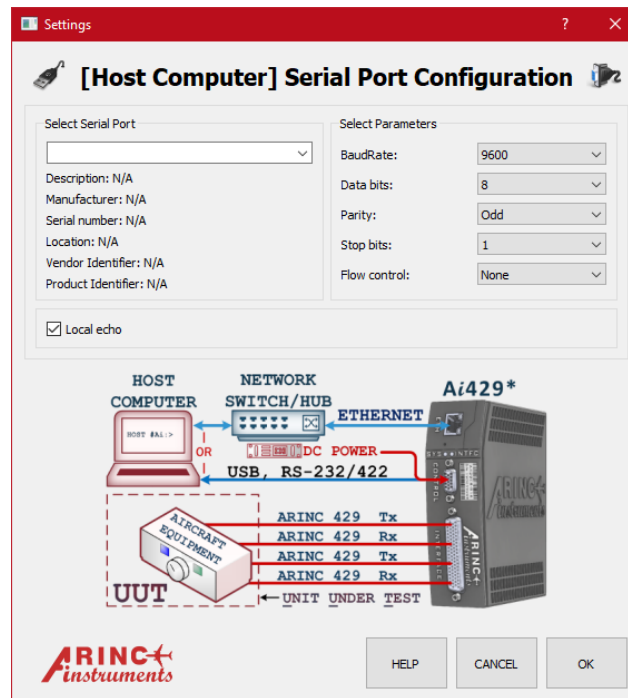
REQUIRED SETUP

- STEP #1.** Decide which mode the device will operate (**Admin/Host**):
 - a. Set the front panel configuration switch to four/4 for RS-232 **Serial Admin mode** – *recommended*.
 - b. Set the front panel configuration switch to five/5 for RS-232 **Serial Host mode**.
 - c. Set the front panel configuration switch to four/8 for RS-422 **Serial Admin mode** – *recommended*.
 - d. Set the front panel configuration switch to five/9 for RS-422 **Serial Host mode**.
- STEP #2.** Connect the AC/DC power adapter barrel connector to the device's power connector.
- STEP #3.** Connect the device to the host computer using a USB cable as shown above.
- STEP #4.** **Optionally** connect the HD78 cable to the Ai429 Interface port
- STEP #5.** **Optionally** connect the HD78 cable to the breakout adapter (ADPT-Ai429-16)
- STEP #6.** Connect the AC/DC power adapter barrel connector to the device's power connector.
- STEP #7.** Connect the AC/DC power adapter to the 120VAC outlet

Ai429 Serial Model AiTerm Serial Startup

To startup the device, it must first be properly setup in accordance to its model. Please review and follow the appropriate section for your device model.

- ☞ Launch the AiTerm application.
- ☞ In AiTerm application, create a new project by clicking New Project button in the Main tab.
- ☞ Using the dialog window, browse to the desired project location and click okay.
- ☞ Enter the new project's name and click okay – the project is created.
- ☞ Click on the Serial or the USB button under the Connection tab.
- ☞ A popup dialog is presented asking to select a serial port along with the necessary parameters.



- ☞ Select the appropriate serial port from the dropdown and set the connection parameters to: **9600 baud, one start bit, odd parity, one stop bit, hardware flow control** and click the Apply button.

☞ Note: for RS-422, the flow control must be “**software XON/XOFF**” or “**None**” because the hardware signals are not present.

☞ The connect button icon changed to a DB9 connector for serial or a USB connector for USB.

- ☞ Click on the Connect button.

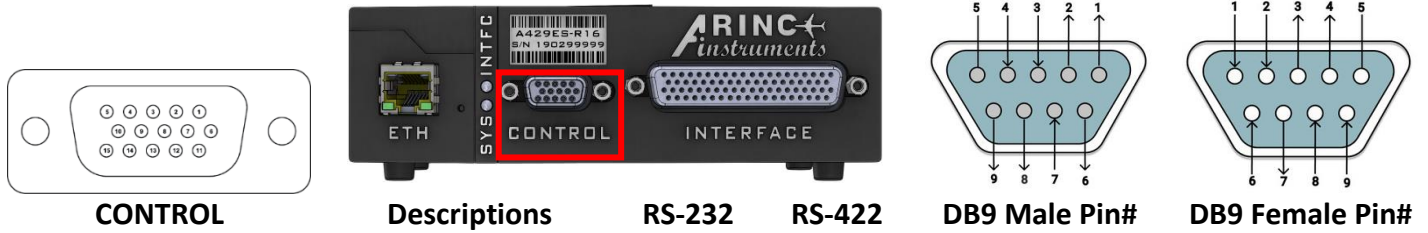
☞ This should take only a few seconds. Once connected, the device’s information will be printed on the AiTerm console screen.

☞ In **Admin** mode, the Ai429 device automatically starts with auto-flow control. This means that choose either software, hardware or no flow control and the connection will still work. For RS-232, hardware flow control. For RS-422, software flow control is recommended because the hardware signals are not present.

For USB connection, the device enumerates as a serial port. This makes the connection procedure the same as a serial port. Also, know that the USB virtual serial bus has both hardware and software flow control.

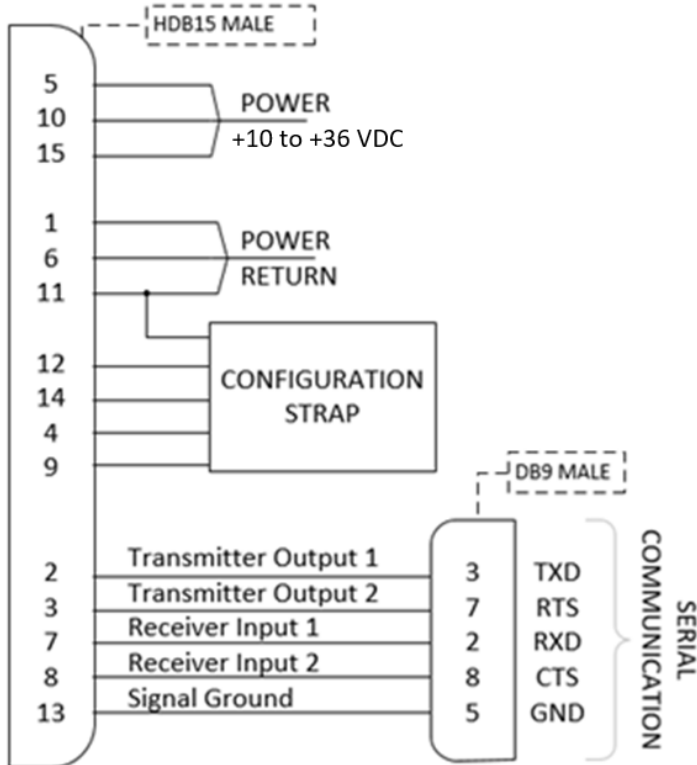
Serial Device Model HD15 Connector Pinout

The table shows the serial device mode's **CONTROL** port pinout along with suggested DB9 connector pinouts

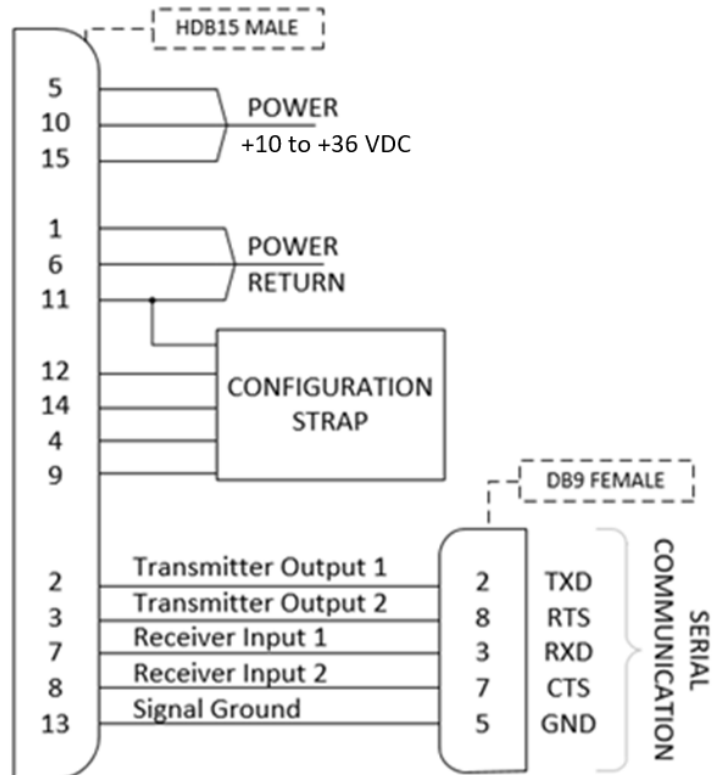


CONTROL	Descriptions	RS-232	RS-422	DB9 Male Pin#	DB9 Female Pin#
2	Transmitter Output 1	TXD	TX-	3	2
3	Transmitter Output 2	RTS	TX+	7	8
7	Receiver Input 1	RXD	RX+	2	3
8	Receiver Input 2	CTS	RX-	8	7
13	Signal Ground	GND	GND	5	5
5, 10, 15	POWER	+10 to +36 VDC			
6, 11, 1	POWER RTN	GROUND / POWER RETURN			
12	CFG STRAP[0]	See Serial Device Model Configuration Strap Table.			
14	CFG STRAP[1]				
4	CFG STRAP[2]				
9	CFG STRAP[3]				

CONTROL PORT CABLE WITH RS-232/422 SERIAL DSUB9 MALE



CONTROL PORT CABLE WITH RS-232/422 SERIAL DSUB9 FEMALE



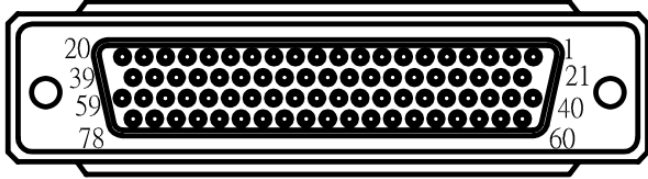
Serial Device Model Configuration Strap Table

STRAP VALUE	STRAP [3:0]	ACTIVE BUS	DEVICE MODE	DESCRIPTIONS
0	ZZZZ	Ethernet	ADMIN	10/100/1000Based-T Ethernet Admin, with TCP/IP – full access.
1	ZZZG	Ethernet	HOST	10/100/1000Based -T Ethernet Host, with TCP/IP – programmable restricted access.
2	ZZGZ	Ethernet	HOST LOCK	10/100/1000Based -T Ethernet Host, with TCP/IP – fixed access restriction.
3	ZZGG	-	-	RESERVED
4	ZGZZ	RS-232	ADMIN	RS-232 Admin, forced 9600 baud with no flow control – full access.
5	ZGZG	RS-232	HOST	RS-232 Serial Host. Up to 1Mbps with optional flow control – programmable restricted access.
6	ZGGZ	RS-232	HOST LOCK	RS-232 Serial Host. Up to 1Mbps with optional flow control – fixed access restriction.
7	ZGGG	-	-	RESERVED
8	GZZZ	RS-422	ADMIN	RS-422 Admin, forced 9600 baud with no flow control – full access.
9	GZZG	RS-422	HOST	RS-422 Host Serial. Up to 15Mbps with optional flow control – programmable restricted access.
A	GZGZ	RS-422	HOST LOCK	RS-422 Host Serial. Up to 15Mbps with optional flow control – fixed access restriction.
B	GZGG	-	-	RESERVED
6-F	****	ISOLATED	NONE	ISOLATED – No Host Interface.

Z := Floating / Not Connected

G := Grounded / Shorted to GND/POWER RTN

DB78 INTERFACE Connector Pinout



PIN#	SIGNALS
59	SIGNAL GROUND
20	SIGNAL GROUND
78	N/C
58	N/C
39	N/C
19	N/C
77	N/C
57	N/C
38	N/C
18	N/C
74	ARINC 429 XMT (A) CH16
54	ARINC 429 XMT (B) CH16
76	ARINC 429 RCV (A) CH16
56	ARINC 429 RCV (B) CH16
35	ARINC 429 XMT (A) CH15
15	ARINC 429 XMT (B) CH15
37	ARINC 429 RCV (A) CH15
17	ARINC 429 RCV (B) CH15
73	ARINC 429 XMT (A) CH14
53	ARINC 429 XMT (B) CH14
75	ARINC 429 RCV (A) CH14
55	ARINC 429 RCV (B) CH14
34	ARINC 429 XMT (A) CH13
14	ARINC 429 XMT (B) CH13
36	ARINC 429 RCV (A) CH13
16	ARINC 429 RCV (B) CH13
70	ARINC 429 XMT (A) CH12
50	ARINC 429 XMT (B) CH12
72	ARINC 429 RCV (A) CH12
52	ARINC 429 RCV (B) CH12
31	ARINC 429 XMT (A) CH11
11	ARINC 429 XMT (B) CH11
33	ARINC 429 RCV (A) CH11
13	ARINC 429 RCV (B) CH11

PIN#	SIGNALS
10	ARINC 429 XMT (A) CH10
29	ARINC 429 XMT (B) CH10
71	ARINC 429 RCV (A) CH10
51	ARINC 429 RCV (B) CH10
49	ARINC 429 XMT (A) CH9
68	ARINC 429 XMT (B) CH9
32	ARINC 429 RCV (A) CH9
12	ARINC 429 RCV (B) CH9
69	SIGNAL GROUND
30	SIGNAL GROUND
7	ARINC 429 XMT (A) CH8
26	ARINC 429 XMT (B) CH8
9	ARINC 429 RCV (A) CH8
28	ARINC 429 RCV (B) CH8
46	ARINC 429 XMT (A) CH7
65	ARINC 429 XMT (B) CH7
48	ARINC 429 RCV (A) CH7
67	ARINC 429 RCV (B) CH7
6	ARINC 429 XMT (A) CH6
25	ARINC 429 XMT (B) CH6
8	ARINC 429 RCV (A) CH6
27	ARINC 429 RCV (B) CH6
45	ARINC 429 XMT (A) CH5
64	ARINC 429 XMT (B) CH5
47	ARINC 429 RCV (A) CH5
66	ARINC 429 RCV (B) CH5
3	ARINC 429 XMT (A) CH4
22	ARINC 429 XMT (B) CH4
5	ARINC 429 RCV (A) CH4
24	ARINC 429 RCV (B) CH4
42	ARINC 429 XMT (A) CH3
61	ARINC 429 XMT (B) CH3
44	ARINC 429 RCV (A) CH3
63	ARINC 429 RCV (B) CH3
2	ARINC 429 XMT (A) CH2
21	ARINC 429 XMT (B) CH2
4	ARINC 429 RCV (A) CH2
23	ARINC 429 RCV (B) CH2
41	ARINC 429 XMT (A) CH1
60	ARINC 429 XMT (B) CH1
43	ARINC 429 RCV (A) CH1
62	ARINC 429 RCV (B) CH1
40	SIGNAL GROUND
1	SIGNAL GROUND