

4.3 Parallel Ports

A single parallel port has been available for SGI systems as a built-in port. It has been built into almost all the systems since the Personal IRIS. Some of the built in parallel ports use the DB-25 connector and some use the 36 pin high density connector. Table 4-27 shows the parallel ports available by platform. Over the years the capabilities of the parallel port have increased. Table 4-27 shows the modes supported by the various parallel ports.

One other parallel port has been available from SGI as an optional port. This was a VME add-in board that supported the Versatec plotter.

Table 4-26 Parallel Port Connector Types

Chassis	Built In Parallel Port Connector Type		Ikon Versatec Parallel Port (option only)
Connector Type	DB-25	36 Pin HiDensity	DB-37
Documented in Section	4.3.1	4.3.2	4.3.3
Twin Tower, Diehard, Predator			X
Personal IRIS	X		X
Indigo	X		
Indigo2	X		
Onyx, Challenge	X		
Indy	X		
O2		X	
OCTANE		X	
Origin200		X	
Origin2000			
Onyx2		X	

There are four possible modes the parallel ports can support:

- STDPP - Standard Parallel Port

This is a standard centronics type parallel port. It can be used to support a parallel interface printer. It is unidirectional in its data flow. This is the same style of parallel port as used on the PC compatible type platforms. In fact, parallel printer cables used

on PC compatibles (with one end having a DB-25 connector, the other with a “Centronics” style 36 pin connector) work perfectly for connecting printers to the SGI systems.

- **SGIPP - SGI Parallel Port**

This port mode supports bidirectional transfers. It was designed to support a particular Ricoh parallel port scanner. This scanner does not conform to any other parallel port standard.

- **BOISEPP - Boise Parallel Port**

This port mode supports bidirectional transfers according to the Boise interface specification. The “Boise Spec” preceded the adoption of the IEEE 1284 specification. However, the hardware was designed before the Boise spec was complete and approved. Since devices that comply with the “Boise” spec were difficult to find, the port has not been fully tested with a “Boise Compatible” device.

- **IEEE 1284 - IEEE Specification for Bi-directional Parallel Peripherals**

The IEEE 1284 specification defines five different modes for a compliant parallel port - compatibility mode, nibble mode, byte mode, ECP (Extended Capability Port) mode, and EPP (Enhanced Parallel Port) mode. The chip used in the systems that support IEEE 1284 has been tested for all these modes. Devices that comply with each of these modes are difficult to find, and thus testing of these features has not been extensive.

Table 4-27 shows the modes supported by the parallel ports on each platform:

Table 4-27 Parallel Ports on SGI Systems

Chassis	Built In Parallel Port				Ikon Versatec Parallel Port (option only)
	STDPP (Unidirectional)	SGIPP (Bidirectional)	BOISEPP (Boise Interface)	IEEE 1284	
Twin Tower, Diehard, Predator					X
Personal IRIS	X				X
Indigo	X	X			
Indigo2	X	X	X		
Onyx, Challenge	X				
Indy	X	X	X		
O2				X	
OCTANE				X	
Origin200				X	
Origin2000					
Onyx2				X	

4.3.1 Built-In Parallel Port (DB-25)

A built-in parallel port has been included with every system designed since the Personal IRIS.

4.3.1.1 Connector Drawing

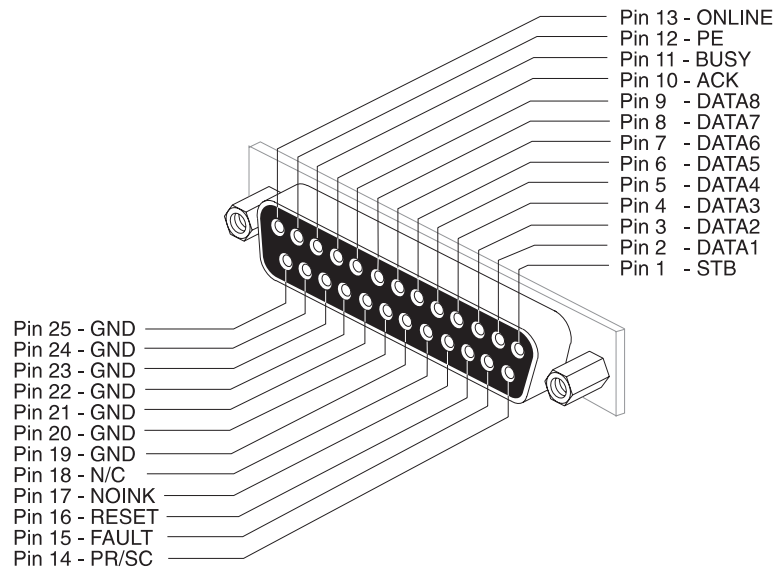


Figure 4-21 DB-25 Parallel Port Connector

4.3.1.2 Parallel Port Modes and Signals

The three possible modes the port can support have different names for certain signals. These signals will be defined here.

- **BUSY** - In the STDPP and BOISEPP modes this signal indicates that the printer is busy. In the SGIPP mode this signal indicates the device receiving the data is busy. Note that in the SGIPP mode the signal is an input/output pin, while in STDPP the signal is an input only.
- **PE** - In the STDPP and BOISEPP modes this signal indicates that the printer has some sort of paper error. This could be a paper path problem (a jam, for instance) or that the printer is out of paper. In the SGIPP mode the signal indicates that the device (in this case assumed to be a scanner) has had an error.
- **AUTOFEED/PR/SC** - In the STDPP and BOISE PP modes the AUTOFEED signal turns on the auto line feed mode of the printer (or some other capability). In the SGIPP mode this signal determines the direction of the data flow. When the signal is high, data flows from the computer to the parallel port device (i.e. printing). When the signal is low, data flows from the device to the computer (i.e. scanning).
- **NOINK/SELECTIN** - In the STDPP mode this signal, when high, indicates the printer has no ink. In the BOISEPP mode, the signal is used to select the attached device. Note that in STDPP mode the signal is an input, while in the BOISEPP mode it's an output.

Pinout

Table 4-28 Built-In Parallel Port (DB-25) Pinout

Pin	STDPP			SGIPP (Ricoh)			BOISEPP		
	Signal Name	Description	I/O	Signal Name	Description	I/O	Signal Name	Description	I/O
1	STB	Strobe	O	Same					
2	DATA1	LSB	I/O	Same					
3	DATA2								
4	DATA3								
5	DATA4								
6	DATA5	Parallel Data							
7	DATA6								
8	DATA7								
9	DATA8								
10	ACK	Acknowledge							
11	BUSY	Printer Busy	I	BUSY	Data Receive Busy	I/O	BUSY	Printer Busy	I
12	PE	Paper Error	I	PE	Scanner Error	I	PE	Paper Error	I
13	SELECT	Printer Online	I	Not Used			SELECT	Printer Online	I
14	AUTO FEED	Auto Line Feed	O	PR/SC	Establishes Data Direction PR = Out SC = In	O	AUTO FEED	Auto Line Feed	O
15	FAULT	Printer Fault	I	Not Used			FAULT	Printer Fault	I
16	RESET	Reset Signal	O	Same					
17	NOINK	No Ink in Printer	I	Not Used			SELECT IN	Device Selected	O
18	N/C	No Connection					GND	Signal Ground	-
19 - 25	GND	Ground	-	Same					

4.3.2 Built In Parallel Port (36 Pin High Density)

4.3.2.1 Connector Drawing

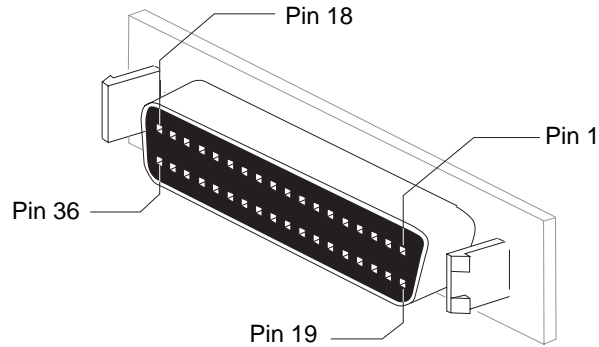


Figure 4-22 36 Pin High Density Parallel Port Connector

4.3.2.2 Pinout

Table 4-29 36 Pin High Density Parallel Port Pinout

Pin	Signal Name	Signal Description
1	BUSY	PRINTER BUSY
2	SELECT	PRINTER ONLINE
3	nACK	ACKNOWLEDGE
4	nFAULT	PRINTER FAULT
5	pERROR	PRINTER ERROR
6	DATA 1	PARALLEL DATA
7	DATA 2	
8	DATA 3	
9	DATA 4	
10	DATA 5	
11	DATA 6	
12	DATA 7	
13	DATA 8	
14	nINIT	
15	nSTROBE	DATA STROBE
16	nSELECTIN	DEVICE SELECTED
17	nAUTOFD	
18		HOST LOGIC HIGH

Pin	Signal Name	Signal Description
19	GND	SIGNAL GROUND (BUSY)
20	GND	SIGNAL GROUND (SELECT)
21	GND	SIGNAL GROUND (nACK)
22	GND	SIGNAL GROUND (nFAULT)
23	GND	SIGNAL GROUND (pERROR)
24	GND	SIGNAL GROUND (DATA 1)
25	GND	SIGNAL GROUND (DATA 2)
26	GND	SIGNAL GROUND (DATA 3)
27	GND	SIGNAL GROUND (DATA 4)
28	GND	SIGNAL GROUND (DATA 5)
29	GND	SIGNAL GROUND (DATA 6)
30	GND	SIGNAL GROUND (DATA 7)
31	GND	SIGNAL GROUND (DATA 8)
32	GND	SIGNAL GROUND (nINIT)
33	GND	SIGNAL GROUND (nSTROBE)
34	GND	SIGNAL GROUND (nSELECTIN)
35	GND	SIGNAL GROUND (nAUTOFD)
36		PERIPHERAL LOGIC HIGH

4.3.3 Ikon Parallel Port Interface (DB-37)

This board was made by Ikon Corporation as an OEM product for SGI. It is no longer sold as an SGI product. It is known as the Ikon board. It's interface is a 37 Pin Sub-D (DB-37). This board actually has two outputs. One is for the Versatec, the other is a standard Centronics printer output. However, the Centronics output was never supported by software.

Since this is a 6U VME board, it was put in a 6U to 9U adapter for placement in the Twin Tower, Diehard or Predator series chassis. For these systems an I/O Panel with a DB-37 connector was installed on the I/O Panel. It could also be placed directly into a Personal IRIS. For these systems a version of the board with a sheetmetal extension was available, again with a DB-37 connection.

4.3.3.1 Connector Drawing

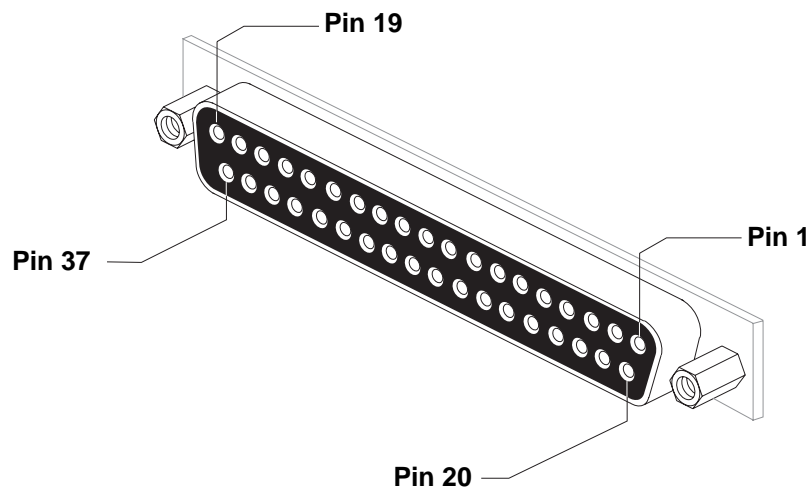


Figure 4-23 DB-37 Ikon Parallel Port Connector

4.3.3.2 Pinout

Table 4-30 Ikon Parallel Port Pinout

Pin	Signal Name	Description	Input/ Output
1	STB	Strobe	Output
2	Data1	Parallel Data	Output
3	Data2		
4	Data3		
5	Data4		
6	Data5		
7	Data6		
8	Data7		
9	Data8		
10	ACK	Acknowledge	Input
11	BUSY	Busy	Input
12	PE	Printer Enabled	Input
13	ONLINE	Printer Online	Input
14	PR/SC	Printer/Scanner	
15	NOPAPER	No Paper in Printer	Input
16	N/C		
17	NOINK	No Ink in Printer	Input
18	N/C		
19 - 30	GND	Ground	
31	RESET	Reset	
32 - 37	N/C		