Universal Switching Corporation

Specification Sheet G2D64B-001

Solid-State High Performance Differential `422 Data Switching Array, Up to 64x64
Series G2D64B

January 2008

General

The Series G2D64B is part of the G2 family of high performance modules. It is a solid-state differential digital data switching array for routing and distributing high speed serial data (up to 50Mbps) streams in a full fanout (broadcast) mode.

Specifically designed for rugged high performance data switching, the I/O ports are full compatible with standard differential `422 drivers and receivers. Inputs are always terminated with 100 ohms between the inputs pairs (not to ground). Standard density connectors (DC-37) provide I/O connectivity to the array with 16 channels per connector.

The module may be configured for a minimum of 32 inputs and 32 outputs, and up to a maximum of 64 inputs and 64 outputs. The arrays are "fixed" size and may not be expanded in the field without additional external equipment. This provides the most cost effective switching solution.

The switching array is non-blocking with full fanout allowing the user to connect any input to one, many, or up to all outputs at any given time (broadcast). No input loading or impedance mis-matches are presented to the user.

This is not a "stand-alone" module for embedding into other equipment. For control and DC power, the module must be installed into any G2 type mainframe with either the -200 or -D200 power supply configuration.

Applications

- Data acquisition systems
- Airborne surveillance systems
- Flight simulators or situation rooms
- Routing and distribution of Clock and Data
- Training, conference or security centers
- Time-Code distribution

Features

- Solid-state switching elements
- Wide digital bandwidth
- New "B" version provides improved signal symmetry
- Non-blocking with full fanout (broadcast)
- True differential I/O circuitry
- Hot-swap module technology

Model G2D64B-6432-20
Differential 32x32

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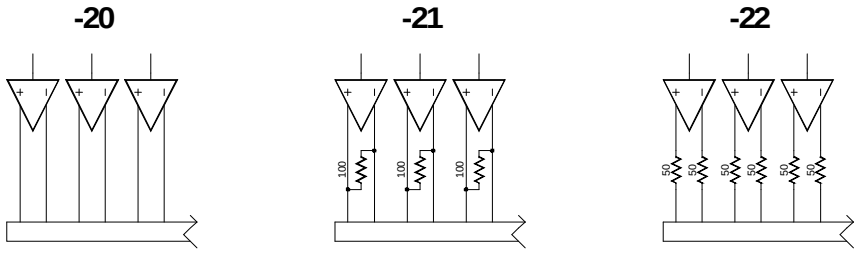
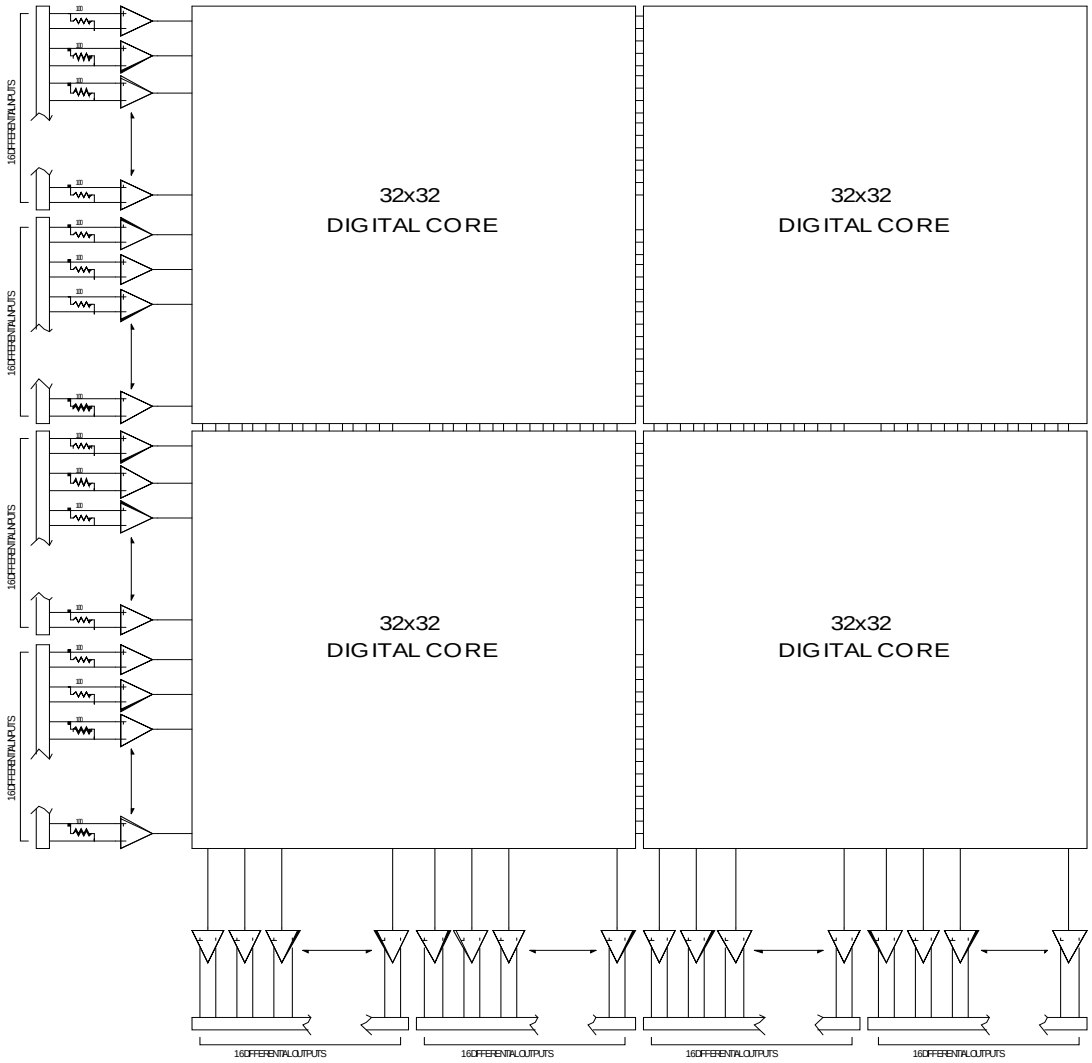
Configurations

Switching array size is specified by the middle digits. Two standard sizes are offed to meet various sized applications. The suffix of the model number specifies the output termination configuration depending upon the use. See the diagrams below.

Model	Switch Array	Slots
G2D64B-6432-20	32 in x 32 out	1 slot
G2D64B-6432-21	32 in x 32 out	1 slot
G2D64B-6432-22	32 in x 32 out	1 slot
G2D64B-12864-20	64 in x 64 out	2 slots
G2D64B-12864-21	64 in x 64 out	2 slots
G2D64B-12864-22	64 in x 64 out	2 slots

Output Options





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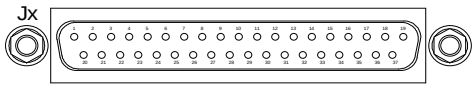
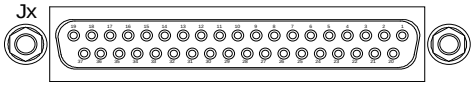
Single Slot Configuration

Below is the pin assignment for connectors J1 to J4 for the single slot version. All connectors have the same layout.



TYPICAL INPUT CONNECTOR
37 POSITION D-SUB MALE
(DC-37P)



TYPICAL OUTPUT CONNECTOR
37 POSITION D-SUB FEMALE
(DC-37S)

Connector J1: (Inputs 1-16)

Pin	Signal	Pin	Signal
1	Input 1 (+)	20	Input 1 (-)
2	Input 2 (+)	21	Input 2 (-)
3	Input 3 (+)	22	Input 3 (-)
4	Input 4 (+)	23	Input 4 (-)
5	Input 5 (+)	24	Input 5 (-)
6	Input 6 (+)	25	Input 6 (-)
7	**GND**	26	**GND**
8	Input 7 (+)	27	Input 7 (-)
9	Input 8 (+)	28	Input 8 (-)
10	Input 9 (+)	29	Input 9 (-)
11	Input 10 (+)	30	Input 10 (-)
12	Input 11 (+)	31	Input 11 (-)
13	Input 12 (+)	32	Input 12 (-)
14	**GND**	33	**GND**
15	Input 13 (+)	34	Input 13 (-)
16	Input 14 (+)	35	Input 14 (-)
17	Input 15 (+)	36	Input 15 (-)
18	Input 16 (+)	37	Input 16 (-)
19	**GND**		

Connector J3: (Outputs 1-16)

Pin	Signal	Pin	Signal
1	Output 1 (+)	20	Output 1 (-)
2	Output 2 (+)	21	Output 2 (-)
3	Output 3 (+)	22	Output 3 (-)
4	Output 4 (+)	23	Output 4 (-)
5	Output 5 (+)	24	Output 5 (-)
6	Output 6 (+)	25	Output 6 (-)
7	**GND**	26	**GND**
8	Output 7 (+)	27	Output 7 (-)
9	Output 8 (+)	28	Output 8 (-)
10	Output 9 (+)	29	Output 9 (-)
11	Output 10 (+)	30	Output 10 (-)
12	Output 11 (+)	31	Output 11 (-)
13	Output 12 (+)	32	Output 12 (-)
14	**GND**	33	**GND**
15	Output 13 (+)	34	Output 13 (-)
16	Output 14 (+)	35	Output 14 (-)
17	Output 15 (+)	36	Output 15 (-)
18	Output 16 (+)	37	Output 16 (-)
19	**GND**		

Connector J2: (Inputs 17-32)

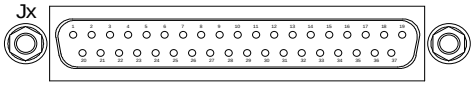
Pin	Signal	Pin	Signal
1	Input 17 (+)	20	Input 17 (-)
2	Input 18 (+)	21	Input 18 (-)
3	Input 19 (+)	22	Input 19 (-)
4	Input 20 (+)	23	Input 20 (-)
5	Input 21 (+)	24	Input 21 (-)
6	Input 22 (+)	25	Input 22 (-)
7	**GND**	26	**GND**
8	Input 23 (+)	27	Input 23 (-)
9	Input 24 (+)	28	Input 24 (-)
10	Input 25 (+)	29	Input 25 (-)
11	Input 26 (+)	30	Input 26 (-)
12	Input 27 (+)	31	Input 27 (-)
13	Input 28 (+)	32	Input 28 (-)
14	**GND**	33	**GND**
15	Input 29 (+)	34	Input 29 (-)
16	Input 30 (+)	35	Input 30 (-)
17	Input 31 (+)	36	Input 31 (-)
18	Input 32 (+)	37	Input 32 (-)
19	**GND**		

Connector J4: (Inputs 17-32)

Pin	Signal	Pin	Signal
1	Output 17 (+)	20	Output 17 (-)
2	Output 18 (+)	21	Output 18 (-)
3	Output 19 (+)	22	Output 19 (-)
4	Output 20 (+)	23	Output 20 (-)
5	Output 21 (+)	24	Output 21 (-)
6	Output 22 (+)	25	Output 22 (-)
7	**GND**	26	**GND**
8	Output 23 (+)	27	Output 23 (-)
9	Output 24 (+)	28	Output 24 (-)
10	Output 25 (+)	29	Output 25 (-)
11	Output 26 (+)	30	Output 26 (-)
12	Output 27 (+)	31	Output 27 (-)
13	Output 28 (+)	32	Output 28 (-)
14	**GND**	33	**GND**
15	Output 29 (+)	34	Output 29 (-)
16	Output 30 (+)	35	Output 30 (-)
17	Output 31 (+)	36	Output 31 (-)
18	Output 32 (+)	37	Output 32 (-)
19	**GND**		

Dual Slot Configuration

Shown on these two pages are the pin assignment for connectors J1 to J8 for the dual slot versions. All connectors have the same layout.



TYPICAL INPUT CONNECTOR
37 POSITION D-SUB MALE
(DC-37P)

Connector J1: (Inputs 1-16)

Pin	Signal	Pin	Signal
1	Input 1 (+)	20	Input 1 (-)
2	Input 2 (+)	21	Input 2 (-)
3	Input 3 (+)	22	Input 3 (-)
4	Input 4 (+)	23	Input 4 (-)
5	Input 5 (+)	24	Input 5 (-)
6	Input 6 (+)	25	Input 6 (-)
7	**GND**	26	**GND**
8	Input 7 (+)	27	Input 7 (-)
9	Input 8 (+)	28	Input 8 (-)
10	Input 9 (+)	29	Input 9 (-)
11	Input 10 (+)	30	Input 10 (-)
12	Input 11 (+)	31	Input 11 (-)
13	Input 12 (+)	32	Input 12 (-)
14	**GND**	33	**GND**
15	Input 13 (+)	34	Input 13 (-)
16	Input 14 (+)	35	Input 14 (-)
17	Input 15 (+)	36	Input 15 (-)
18	Input 16 (+)	37	Input 16 (-)
19	**GND**		

Connector J2: (Inputs 17-32)

Pin	Signal	Pin	Signal
1	Input 17 (+)	20	Input 17 (-)
2	Input 18 (+)	21	Input 18 (-)
3	Input 19 (+)	22	Input 19 (-)
4	Input 20 (+)	23	Input 20 (-)
5	Input 21 (+)	24	Input 21 (-)
6	Input 22 (+)	25	Input 22 (-)
7	**GND**	26	**GND**
8	Input 23 (+)	27	Input 23 (-)
9	Input 24 (+)	28	Input 24 (-)
10	Input 25 (+)	29	Input 25 (-)
11	Input 26 (+)	30	Input 26 (-)
12	Input 27 (+)	31	Input 27 (-)
13	Input 28 (+)	32	Input 28 (-)
14	**GND**	33	**GND**
15	Input 29 (+)	34	Input 29 (-)
16	Input 30 (+)	35	Input 30 (-)
17	Input 31 (+)	36	Input 31 (-)
18	Input 32 (+)	37	Input 32 (-)
19	**GND**		

Connector J3: (Inputs 33-48)

Pin	Signal	Pin	Signal
1	Input 33 (+)	20	Input 33 (-)
2	Input 34 (+)	21	Input 34 (-)
3	Input 35 (+)	22	Input 35 (-)
4	Input 36 (+)	23	Input 36 (-)
5	Input 37 (+)	24	Input 37 (-)
6	Input 38 (+)	25	Input 38 (-)
7	**GND**	26	**GND**
8	Input 39 (+)	27	Input 39 (-)
9	Input 40 (+)	28	Input 40 (-)
10	Input 41 (+)	29	Input 41 (-)
11	Input 42 (+)	30	Input 42 (-)
12	Input 43 (+)	31	Input 43 (-)
13	Input 44 (+)	32	Input 44 (-)
14	**GND**	33	**GND**
15	Input 45 (+)	34	Input 45 (-)
16	Input 46 (+)	35	Input 46 (-)
17	Input 47 (+)	36	Input 47 (-)
18	Input 48 (+)	37	Input 48 (-)
19	**GND**		

Connector J4: (Inputs 49-64)

Pin	Signal	Pin	Signal
1	Input 49 (+)	20	Input 49 (-)
2	Input 50 (+)	21	Input 50 (-)
3	Input 51 (+)	22	Input 51 (-)
4	Input 52 (+)	23	Input 52 (-)
5	Input 53 (+)	24	Input 53 (-)
6	Input 54 (+)	25	Input 54 (-)
7	**GND**	26	**GND**
8	Input 55 (+)	27	Input 55 (-)
9	Input 56 (+)	28	Input 56 (-)
10	Input 57 (+)	29	Input 57 (-)
11	Input 58 (+)	30	Input 58 (-)
12	Input 59 (+)	31	Input 59 (-)
13	Input 60 (+)	32	Input 60 (-)
14	**GND**	33	**GND**
15	Input 61 (+)	34	Input 61 (-)
16	Input 62 (+)	35	Input 62 (-)
17	Input 63 (+)	36	Input 63 (-)
18	Input 64 (+)	37	Input 64 (-)
19	**GND**		

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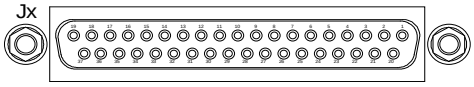


TYPICAL OUTPUT CONNECTOR
37 POSITION D-SUB FEMALE
(DC-37S)

Connector J5: (Outputs 1-16)

Pin	Signal	Pin	Signal
1	Output 1 (+)	20	Output 1 (-)
2	Output 2 (+)	21	Output 2 (-)
3	Output 3 (+)	22	Output 3 (-)
4	Output 4 (+)	23	Output 4 (-)
5	Output 5 (+)	24	Output 5 (-)
6	Output 6 (+)	25	Output 6 (-)
7	**GND**	26	**GND**
8	Output 7 (+)	27	Output 7 (-)
9	Output 8 (+)	28	Output 8 (-)
10	Output 9 (+)	29	Output 9 (-)
11	Output 10 (+)	30	Output 10 (-)
12	Output 11 (+)	31	Output 11 (-)
13	Output 12 (+)	32	Output 12 (-)
14	**GND**	33	**GND**
15	Output 13 (+)	34	Output 13 (-)
16	Output 14 (+)	35	Output 14 (-)
17	Output 15 (+)	36	Output 15 (-)
18	Output 16 (+)	37	Output 16 (-)
19	**GND**		

Connector J6: (Outputs 17-32)

Pin	Signal	Pin	Signal
1	Output 17 (+)	20	Output 17 (-)
2	Output 18 (+)	21	Output 18 (-)
3	Output 19 (+)	22	Output 19 (-)
4	Output 20 (+)	23	Output 20 (-)
5	Output 21 (+)	24	Output 21 (-)
6	Output 22 (+)	25	Output 22 (-)
7	**GND**	26	**GND**
8	Output 23 (+)	27	Output 23 (-)
9	Output 24 (+)	28	Output 24 (-)
10	Output 25 (+)	29	Output 25 (-)
11	Output 26 (+)	30	Output 26 (-)
12	Output 27 (+)	31	Output 27 (-)
13	Output 28 (+)	32	Output 28 (-)
14	**GND**	33	**GND**
15	Output 29 (+)	34	Output 29 (-)
16	Output 30 (+)	35	Output 30 (-)
17	Output 31 (+)	36	Output 31 (-)
18	Output 32 (+)	37	Output 32 (-)
19	**GND**		

Connector J7: (Outputs 33-48)

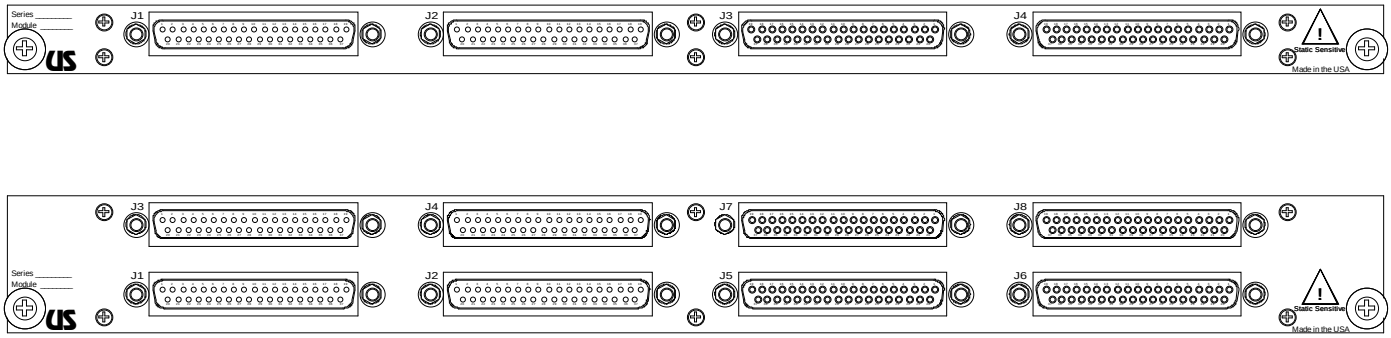
Pin	Signal	Pin	Signal
1	Output 33 (+)	20	Output 33 (-)
2	Output 34 (+)	21	Output 34 (-)
3	Output 35 (+)	22	Output 35 (-)
4	Output 36 (+)	23	Output 36 (-)
5	Output 37 (+)	24	Output 37 (-)
6	Output 38 (+)	25	Output 38 (-)
7	**GND**	26	**GND**
8	Output 39 (+)	27	Output 39 (-)
9	Output 40 (+)	28	Output 40 (-)
10	Output 41 (+)	29	Output 41 (-)
11	Output 42 (+)	30	Output 42 (-)
12	Output 43 (+)	31	Output 43 (-)
13	Output 44 (+)	32	Output 44 (-)
14	**GND**	33	**GND**
15	Output 45 (+)	34	Output 45 (-)
16	Output 46 (+)	35	Output 46 (-)
17	Output 47 (+)	36	Output 47 (-)
18	Output 48 (+)	37	Output 48 (-)
19	**GND**		

Connector J8: (Outputs 49-64)

Pin	Signal	Pin	Signal
1	Output 49 (+)	20	Output 49 (-)
2	Output 50 (+)	21	Output 50 (-)
3	Output 51 (+)	22	Output 51 (-)
4	Output 52 (+)	23	Output 52 (-)
5	Output 53 (+)	24	Output 53 (-)
6	Output 54 (+)	25	Output 54 (-)
7	**GND**	26	**GND**
8	Output 55 (+)	27	Output 55 (-)
9	Output 56 (+)	28	Output 56 (-)
10	Output 57 (+)	29	Output 57 (-)
11	Output 58 (+)	30	Output 58 (-)
12	Output 59 (+)	31	Output 59 (-)
13	Output 60 (+)	32	Output 60 (-)
14	**GND**	33	**GND**
15	Output 61 (+)	34	Output 61 (-)
16	Output 62 (+)	35	Output 62 (-)
17	Output 63 (+)	36	Output 63 (-)
18	Output 64 (+)	37	Output 64 (-)
19	**GND**		

Connector Panel Layout

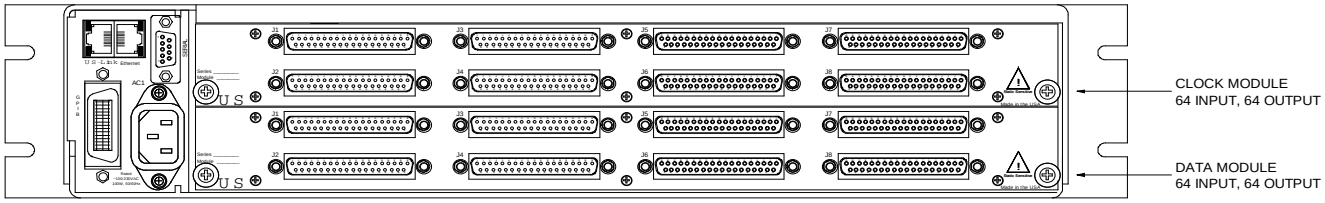
Shown below are the two panel layouts.



Application Example

Shown below is a typical application for the G2D64B module. Two identical modules are installed into a single 2RU rack mounted mainframe. The upper module could be used for routing differential "clock" signals while the lower module route "data" signals. The firmware in the unit allows the user to control both levels at the same time (gang-controlled). When commands are received, both modules respond at the same time.

REAR VIEW OF A 2RU RACK MOUNTED MAINFRAME (G2S400CE-D200 TYPE)



Signal Specifications

Switching elements	.Solid-State digital core
Number of inputs	.32 or 64
Number of outputs	.32 or 64
Type of array	.Non-blocking with broadcast
Signal I/O type	.Differential (422)
Input receivers	.High speed 422 type
Output drivers	.High speed 422 type
Data rate	.DC-50Mbps
Symmetry	.Better than 55%/45% @ 10Mbps
Switching speed	.<250uS (plus control time)
Input impedance	.100 ohms (std)
Output impedance	.Options available (see page 2)
Input signal connector	.D-Type (DC-37P)
Output signal connector	.D-Type (DC-37S)

Universal Switching's policy is one of continuous development, and consequently the company reserves the right to vary from the descriptions and specifications shown in this publication.

General Specifications

Module size	.1 or 2 slot height (see page 2)
Control type	.G2 compatible
Sparing	.Hot-swappable
Construction	.Shielded aluminum case
DC power	.-200 or -D200 configuration
Weight	.<3lbs (largest unit)
Operating temp	.0 to +60C
Non-operating temp	.-20 to +85C
Humidity	.0 to 95% (NC @ +25C)
MTBF	.>55,000 hours (per MIL-HDBK-217F, N1 ground benign @ +25C)

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