

# RF Switching Solutions

## 4104-4/10

### DC - 18 Ghz RF Switch Matrix

#### Applications

The Model 4104 is a bi-directional coaxial switch matrix system that performs up to 18 GHz.

The model 4104 is a Master Controller that supports up to 4 individual single pole ten throw (SP10T) switches (its maximum capacity) in a low profile 1U (1.75 inch) high full rack enclosure rack mountable chassis. Easy access to RF Input/Output connectors from the rear panel permits easy maintenance and reconfiguration.

Final configurations can be offered from 1 SP10T Switch with a Master Controller - allowing the end user to grow the system to its maximum capacity (4 SP10T controlled by a Master Controller) by purchasing individual switches and integrating them into the system, as needed.

The system also can be populated with SP6T and SP8T Switches. Additional expansion options are available by adding a Slave Module that will grow the system with ability to control a total of 12 Switches with one Master Controller.

Users can easily access this matrix from anywhere in the world via TCP/IP protocols on 10Base T networks or through traditional RS 232, RS 485 and GPIB controls. Each unit is equipped with an LCD front panel display and keypad for manual override and Ethernet control (802.3).



#### RF Characteristics

|                      |                                   |
|----------------------|-----------------------------------|
| Impedance:           | 50 Ohms                           |
| Operating Frequency: | DC – 18 GHz                       |
| Switching Speed:     | 50 - 100 ms Max                   |
| Operating Life:      | 1,000,000 cycles (Cold Switching) |

#### Physical

|                       |   |
|-----------------------|---|
| Relay Type:           | Failsafe Multiposition / Electromechanical                                      |
| Contact Material:     | Beryllium copper, gold-plated   |
| I/O Connectors In/Out | SMA Female jacks  |
| Dimensions:           | 19" wide standard rack mount<br>1 U height maximum (1.75")<br>24" depth maximum |
| Color Front panel:    | Gray  |

#### Environmental

|   |                                   |
|---|-----------------------------------|
| 85–264 VAC (47–63 Hz) @ 375W max  |                                   |
| Standard AC grounded power cable (removable, IEC 320 C19 to NEMA 5–15P) |                                   |
| Fuse/Breaker:   | Externally accessible/replaceable |
| Storage Temp:   | -20° to +70° C                    |
| Operating Temp:   | 0° to +60° C                      |
| Operating humidity:   | 10 – 80% (non-condensing)         |

#### Command and Control

Local control via front panel  
Solid state controller w/ LCD display  
Keypad for manual override and local control  
Remote control via serial and network connection

ENET Version with the following Remote Controls:  
Rear panel RS232 (DB9 female) standard DCE pin-out  
Default 9600, no parity, 8 data bits, 1 stop bit data rate Network  
10BT/100BT Ethernet interface (RJ45 connector)  
CAN Bus

GPIB Version with the following Remote Controls:  
Rear panel RS232 (DB9 female) standard DCE pin-out - default 9600, no parity, 8 data bits, 1 stop bit data rate Network  
Rear panel RS 485  
Rear panel iEEE0488 / GPIB  
CAN Bus

#### Voltage Standing Wave Ratio (VSWR)

| Frequency (Ghz) |      |       |
|-----------------|------|-------|
| DC-8            | 8-12 | 12-18 |
| 1.40            | 1.60 | 1.80  |

#### Insertion Loss (dB)

| Frequency (Ghz) |      |       |
|-----------------|------|-------|
| DC-8            | 8-12 | 12-18 |
| 0.4             | 0.5  | 0.8   |

#### Open Channel Isolation (dB)

| Frequency (Ghz) |      |       |
|-----------------|------|-------|
| DC-8            | 8-12 | 12-18 |
| 70              | 60   | 50    |

#### RF Carry Power (W)

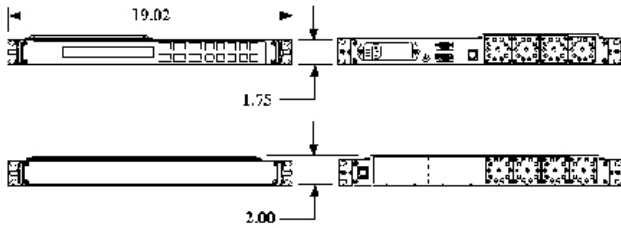
| Frequency (Ghz) |      |       |
|-----------------|------|-------|
| DC-8            | 8-12 | 12-18 |
| 80 W            | 60 W | 40 W  |

# DC - 18 Ghz RF Switching Solutions

The 4104 System can be expanded up to 8 or 12 Controllable Switches under one Master Controller.

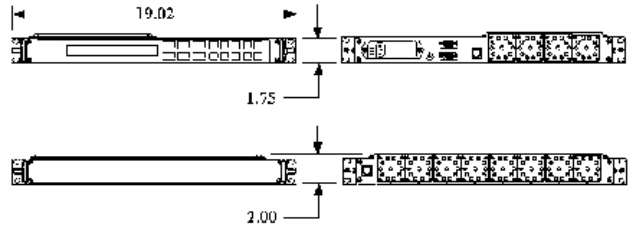
## System 5051

Expansion Version #1  
4104-4/10 Master Controller (up to 4 SP10T) and  
5051 with 4 SP10T Expandable Module

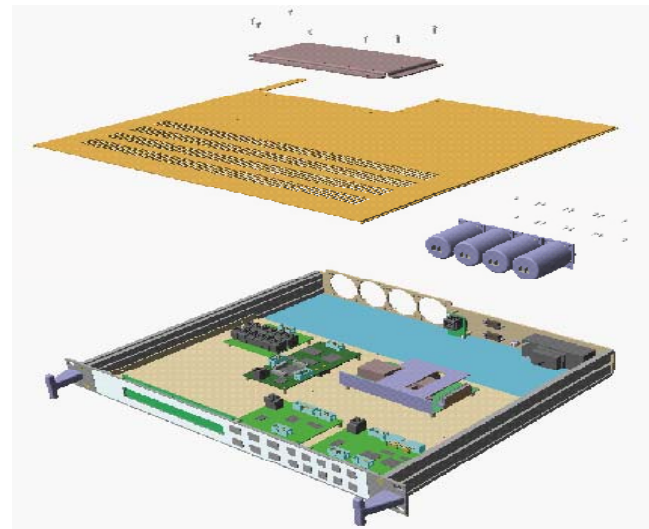


## System 5052

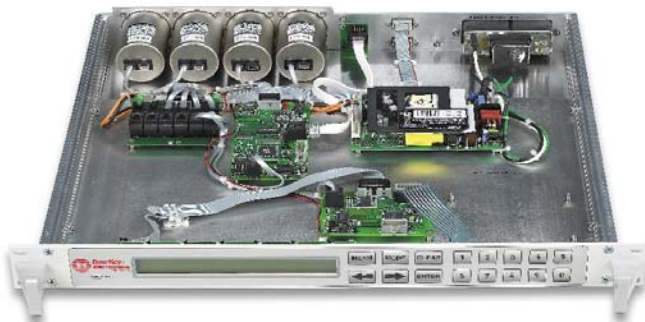
Expansion Version #2  
4104-4/10 Master Controller (up to 4 SP10T) and  
5052 with 8 SP10T Expandable Module



**Back View of 4104-4/10-ENET**



- All switches mounted directly into the back of the chassis for improved RF Performance
- Removable top panel for easy access to components



**Inside View of 4104-4/10-ENET**



### Integrated Microwave Solutions

4822 McGrath Street, Ventura, CA 93003  
Tel: (805) 650-0260 Fax: (805) 650-1734  
Visit at [www.dowkey.com](http://www.dowkey.com)