RETRO Innovations

X-Pander

3 Slot Cartridge

Port Expander

User's Manual

Features

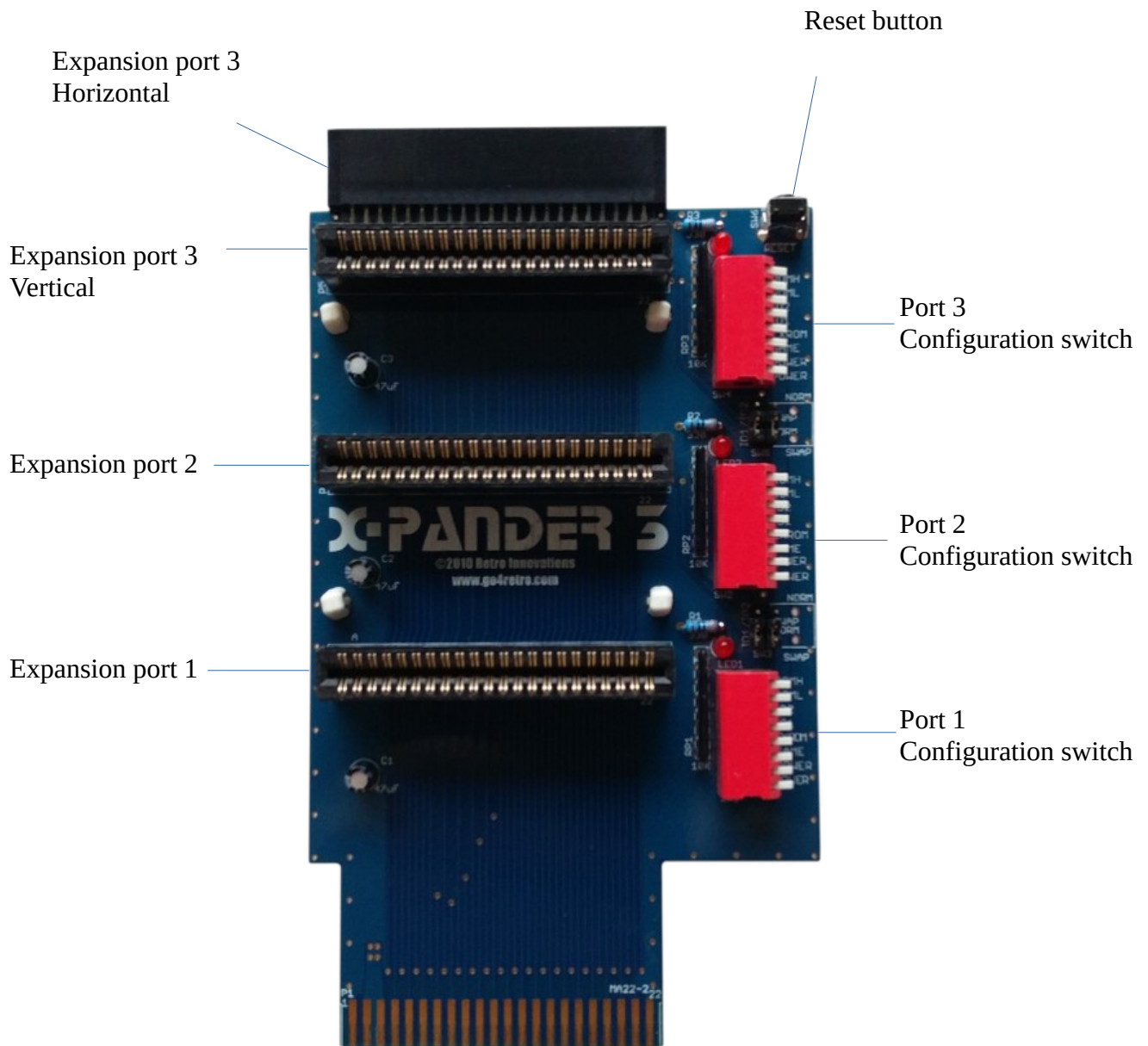The X-Pander 3 is equipped with the features outlined in Figure 1 below.

Reset button

Expansion port 3
Horizontal

Expansion port 3
Vertical

Port 3
Configuration switch

Expansion port 2

Port 2
Configuration switch

Expansion port 1

Port 1
Configuration switch

Figure 1: Top View of X-Pander 3

Up – Off
Down - On

Rom-High
Rom-Low
IO2
IO1
Ex-Rom
Game
+5 / Power
+5 / Power

Description of Features

Your Cartridge Port Expander is equipped with three expansion ports. Each port is controlled by an eight-position configuration switch, providing the flexibility to activate or deactivate the individual cartridge port signals. Certain cartridges may not be compatible with other cartridges thus requiring one or more of the cartridges to be disabled in order to run the other. By deactivating a given signal or all signals, the cartridges may remain plugged in when not in use without conflicting with other cartridges which are in use. The port signals that can be switched are as follows:

Switch	Signal
Power	+5 volts power* (from computer)
Game	GAME signal line (from cartridge)
EXROM	EXROM signal line (from cartridge)
IO1	I/O1 signal line (from computer)
IO2	I/O2 signal line (from computer)
ROML	ROML signal line (from computer)
ROMH	ROMH signal line (from computer)

*Two (2) +5 switches are provided in order to assure ample power is supplied. Both must be switched off when attempting to disable power to a cartridge.

I/O Jumpers

A pair of configuration jumpers are provided for changing the addresses of the I/O 1 and 1/02 signals on the center expansion port (Port #2). Normally, the I/O 1 signal controls cartridges at the $DExx page of memory, while 1/02 controls cartridges at the $DFxx page. By changing these two jumpers, you can effectively change the I/O address of a cartridge. This can be useful if you have two cartridges which conflict; be aware, however, that many cartridges will not work at alternate addresses without other software or firmware modifications. Two exceptions are the SwiftLink and SID Symphony cartridges from CMD, which come with software that can utilize these cartridges at either address.

Reset Switch

Your Cartridge Port Expander is also equipped with a reset switch. By depressing the button on this switch you will perform a hard reset of the computer system. This is similar to the reset which occurs when you turn the computer off and back on. You should use the reset switch when activating cartridges that have firmware inside, such as the Super Snapshot or Action Replay cartridges.

Installation and Setup

Your Cartridge Port Expander comes fully assembled and ready for connection to your computer. As is true with any cartridge, certain precautions should be taken so that you do not damage your computer during installation. 1. Turn your computer off before installing the Cartridge Port Expander into your computer's cartridge port. *(NEVER* insert the Expander into your computer, or other cartridges into the Expander, while the computer power is on.) 2. Plug in the Expander into the cartridge port. Make certain that the Expander is inserted squarely into the port and is fully seated. 3. Place your cartridges into the Expander and configure the switches. Cartridges must be inserted with the front of the cartridge facing you.

Using Multiple Cartridges

There are several things to keep in mind when using multiple cartridges on the Commodore Expansion Port. First and foremost is that not all computers can drive multiple cartridges in the Expansion Port. While most computers can, some simply do not have strong enough signals to drive multiple devices. This is especially true when a RAM Expansion Unit is plugged in. The term for this condition is *signal degradation.*

Typical symptoms of signal degradation include: erratic operation, system lockups, and data corruption (in REU's). In some cases, this condition may be corrected by replacing the PLA chip in the computer.