

pointing, finger pointing seems more intuitive especially when pointing at pictures. My favorite demo AmigaVision program had several "hit" areas on a face that would play digitized words when touched with the finger. The TouchLink worked equally well directing flow in a CanDo program, using simple shaded buttons. Because of its limited resolution, this touch screen was never designed to replace a graphics tablet. Nevertheless, I had a blast in DPaint drawing with my left finger and selecting tools with my mouse! Unfortunately, every nuance of movement was exaggerated when using my finger (God help you if you have a tremor...!!).

Final Thoughts

When I first received the TouchLink package, I was quite disappointed with the "bare" appearance of the Dynapro touch panel. You can also imagine my escalating distress when I read the various recommended ways of mounting the panel: tape, silicone sealer...ugh! Then I realized this panel was designed for kiosk applications where a custom enclosure would usually be built around the monitor. My faith was restored when I tried the Keytec MagicTouch panel; when hung on my monitors, it looked like it was part of them. A flat face monitor is much recommended for touch screen applications: the closer the touch panel is next to your monitor, the less problems with parallax error. I am most impressed with how well integrated the hardware and software are in this kit. To me, this is no surprise since I have another Geodesic product, the AirLink. For video kiosk work, I can't think of a better combination than the TouchLink, a CD32, and a flat face monitor. But, I also think the TouchLink is perfect for educational uses--just ask my 2 year old daughter. She became fascinated and quite proficient at "finger-painting" with the TouchLink and DPaint. Touch screens are fun! Although there will be other vendors of Amiga touch screens by the time you read this review, I doubt you will find a better value than the TouchLink kit.

TouchLink
\$300.00 with touch panel
\$150.00 without touch panel
Geodesic Designs, Inc.
P.O. Box 956068
Duluth, GA 30136-9502
(404) 822-0566
(404) 339-9995 FAX/BBS
Inquiry #XXX

Dynapro Thin Film Products, Inc.
7025 West Marcia Road
Milwaukee, WI 53223
(414) 365-3555 ask for information kit
(414) 365-1133 FAX
Inquiry #XXX

Keytec, Inc.
1293 North Plano Road
Richardson, TX 75081
(214) 234-8617
(214) 234-8542 FAX
Inquiry #XXX

Table 1: Touch Panel Specs

| | |
|-----------------------|----------------------------------|
| Make and Model: | Dynapro 95612 |
| Film Type: | Analog |
| Backer: | Glass |
| Outside Dimensions: | 12.50 X 9.75 in |
| Active Dimensions: | 10.875 X 8.125 in |
| Surface Finish: | Clear |
| Actuation Force: | 2 to 3 ounces |
| Optical Transmission: | > 70% |
| Rated Life: | > 1 million actuations per point |

Table 2: TouchLink Controller Specs

| | |
|---------------------|------------------|
| Technology: | Analog Resistive |
| Power Requirements: | 5 VDC at 75 ma |
| Switch Current: | 40 ma |
| Resolution: | 256 X 256 |
| Operating Temp.: | 0 C to 60 C |
| Response Time: | 50 msec |

Table 3: TouchLink Program Options

| | |
|------------|----------------------|
| CX_POPKEY= | <hotkey> |
| CX_POPUP= | YES NO |
| PRIORITY= | N |
| XOFF= | N |
| YOFF= | N |
| PORT= | GAME1 GAME2 PARALLEL |
| HOLD= | ON OFF |
| CAL= | FILE CD32 CLOCKLINK |
| REQ= | ON OFF |
| FAST= | ON OFF |

The Touchlink Touch Screen Kit

by Ron M. Battle

I remember first seeing the HP-150 personal computer; how mesmerizing to watch the cursor follow my finger on the screen and execute commands just by touching. Alas, the pointing device of choice became the rodent variety and the rest is history, but history does tend to repeat itself! With the advent of affordable multimedia machines such as the CD32, there has been a resurgence of interest in touch screens for video kiosk and educational use. The redeeming qualities of a touch screen include durability, functionality, and simplicity.

The Hardware

The Touchlink kit from Geodesic Designs consists of a touch panel, a mouse port extension cable, Touchlink controller, extra 4-pin cables, 2 diskettes, and the 21 page manual. Your choice of touch panel should be based on the intended application. For video kiosk use, where the touch screen would be built into a frame, you would probably choose the bare Dynapro panel. For adding a touch screen to the front of an existing monitor, the Keytec Magic Touch panel would be more suitable. Both of these panels are flat analog resistive types: your finger touch generates voltages based on the x and y coordinates. The Dynapro panel is glass backed, has a simple 4 pin connector, and lacks a supporting frame. See table 1 for specifications. The Keytec Magic Touch panel is acrylic backed, has a built in cable with a modular connector, and a slick plastic frame. You simply attach the two foam backed clips and hang the panel from the top of your monitor. There are several sizes of rubber bumpers included to place around the frame but adding a piece of velcro to the bottom of the frame and monitor works well. The Touchlink controller is about the size of a standard gender changer with a 9 pin female connector on one end and 4 pin female modular socket on the other end. See table 2 for specifications. Although The Touchlink usually attaches to gameport 1 or gameport 2, you can buy an extra cable for \$5.00 to attach to the parallel port. This is very helpful if you have other equipment hanging off the gameport such as the AirLink or a genlock.

The Software

The Install_Touchlink script uses the standard Commodore installer program to rapidly and easily install the Touchlink programs on your system. First, run the TL_Calibrate program and touch the 9 areas on the screen to establish the reference points for your monitor. This information is saved to the s:TouchLink.cal program or into nonvolatile memory on the CD32. Other options include opening the program on a public screen and specifying the Touchlink port (GAME1 or GAME2 or PARALLEL). The main TouchLink program integrates into the Amiga system as a commodity. A commodity program monitors your keyboard and

mouse inputs before Intuition or other application programs and can be hidden without actually exiting the program. You may run the program from its icon or from the CLI; automatically if the program is in your WBStartup directory or startup-sequence. When first started, TouchLink reads calibration data from the s:TouchLink.cal file created by TL_Calibration. Your touch panel and finger now emulate a mouse! Pressing a point on the screen is the same as a single left mouse button click and as long as pressure is applied, the cursor will follow. You do have the option of setting HOLD=ON to allow dragging, drawing, painting, and sizing with your finger. See table 3 for the program options. For CD32 developers, there is also a disk with AmigaDOS 3.0 and custom script code to add to your boot-up sequence, to make your CD32 programs "TouchLink Aware." Of course, you will need an expansion board to access floppy drives!

The Testdrive

I tested the TouchLink system with Amiga 3000 and CD32 computers, 1950 and 1080 monitors, and Keytec/MagicTouch and Dynapro/95612 touch panels. The manual has a simple schematic to help you hook up the pieces. The mouse/joy port extender cable really helps reduce wear and tear when connecting and disconnecting numerous accessories so leave it attached! One precaution: make sure the computer's power is OFF before connecting any accessories! I attached the Dynapro panel with tape to the front of the monitors. Although less than ideal, this configuration worked satisfactorily. The MagicTouch panel attached easily by hanging it from the top of the monitors. To increase stability, I added pieces of velcro to the bottom of the panel and monitors. This panel initially had a slight "crunchy" feel that gradually subsided with use. After running the TL_Calibrate program, I pressed the 9 points on the screen to calibrate the system. To prevent parallax error, make sure your eyes are directly inline with the point you are touching. For feedback, the program does report a final accuracy rating; your goal is >90% (the higher the better!). The next step was to run the main TouchLink program and set up some example demos in AmigaVision and CanDo. Although not as precise as mouse