

## Infrared Touch Panels With Controller



TIP products are infrared touch panels designed to fit most flat panel display technologies. The touch panels are a matrix of infrared diodes and detectors, scanning electronics, micro-processor controller, bezel/optical filter assembly and hardware to mount the touch panel and controller to the flat panel display. These touch panels are ideal for many applications including medical instrumentation, machine or process controls, point of sale devices, public information displays, banking and military.

Vishay Dale® TIP touch panels have a unique patented scanning I9ogic system that makes them virtually immune to most lighting environments.

Optional PC based software (TBDriver, a DOS mouse emulator; and TWDriver, a Windows® mouse emulator) provide simple touch panel integration.

Windows® is a registered trademark of the Microsoft Corporation.

### FEATURES

- Fast response time
- Flexible operating modes
- User transparent
- Rugged construction
- Sealed for environmental resistance
- Immune to high or changing ambient light
- RS-232C interface
- Pre-assembled - no assembly or disassembly required to mount display

### ELECTRICAL SPECIFICATIONS

**Voltage:** + 12 VDC  $\pm$  5%.

**Current:** 400 mA typical.

### ENVIRONMENTAL SPECIFICATIONS

**Operating Temperature:** 0°C to + 55°C.

**Storage Temperature:** - 55°C to + 85°C.

**Relative Humidity:** 10 - 90% non-condensing.

### INTERFACE SPECIFICATIONS

**Type:** RS-232C.

**Data Rate:** 300, 1200, 9600 baud and auto baud.

**Word Format:** 8 bits, no parity, 1 start bit, 1 stop bit.

### ORDERING INFORMATION

**TIP**  
MODEL

**3216**  
MATRIX

**FA**  
DISPLAY  
DESIGNATOR

**A**  
FILTER \*

**XXX**  
DASH NUMBER  
(If Required)

| TOUCH PANEL |              | DISPLAY   |            |                           |                                   |                |
|-------------|--------------|-----------|------------|---------------------------|-----------------------------------|----------------|
| MATRIX      | TOUCH POINTS | PIXELS    | TECHNOLOGY | MANUFACTURER              | PART NUMBER                       | DESIGNATOR     |
| 3216        | 63 x 31      | 512 x 256 | ELD        | Finlux<br>Planar          | MD512.256<br>EL6648MSS            | FA<br>PA       |
| 3220        | 63 x 39      | 640 x 400 | ELD        | Finlux<br>Planar<br>Sharp | MD640.400<br>EL8358HR<br>LJ640U27 | FB<br>PB<br>SA |
| 3224        | 63 x 47      | 640 x 480 | ELD        | Sharp                     | LJ64ZU49                          | SB             |
| 3526        | 69 x 51      | 640 x 480 | ELD        | Planar                    | EL7768MS                          | PC             |

A = Non polarized, gray  
B = Polarized, gray  
C = Non polarized, amber  
D = Polarized, amber  
S = Special - Contact factory

\*Other user specified filters will be designated as "S". Contact factory for availability. Any "S" filter designation will require a factory assigned dash number suffix. Filters A-D are plastic. Glass filters may be available on selected models.

**Note:** Many additional touch panel options available to fit color LCD's and other display technologies. Please contact factory for assistance.

## GENERAL DESCRIPTION

Each Vishay Dale® touch panel has infrared LED emitters and detectors along the X— and Y— axis, forming a grid of infrared light beams across the face of the display. The first two numbers of the TIP "matrix" number specify the number of vertical beams and the last two numbers specify the number of horizontal beams. The controller scans the emitter/detector pairs one at a time and determines whether both X and Y beams are blocked, indicating that a finger or stylus is present. (When beams are blocked on only one axis, they are ignored and not reported to the host.) The controller determines the coordinates of the touch point and reports them to the host computer. By interpolating a "virtual" beam between two physical beams, the number of touch points on each axis is effectively doubled. When an odd number of beams along either axis is blocked, the coordinate of the center physical beam is reported. When an even number of beams is blocked, the coordinate of the virtual beam in the center of the blocked beams is calculated and reported. The touch controller supports ENTER, EXIT, CONTINUOUS and TRACKING report modes or combinations of these modes. The controller also has a beeper output. Hardware handshaking, software handshaking, baud rates and auto-baud features are jumper selected. The user initializes the desired report modes and requests reports when needed. Several optical filters are standard to provide the most cost effective filter for each application. "Non-standard" filters may be specified as well. The filter increases the contrast ratio of the display and protects the display face and electronics. Vishay Dale® can assist in recommending the optimum filter based on years of experience as a display manufacturer. The perimeter of the filter is bonded to the bezel and a bezel to front panel gasket is included to provide a splash proof seal.

## MATING CONNECTORS

|        | DALE      | OTHER                                          |
|--------|-----------|------------------------------------------------|
| J1     | 280105-02 | AMP 746288-1                                   |
| J5, J6 | 280108-07 | MOLEX 22-01-3027 housing, 08-50-0114 terminals |
| J4     | 280108-06 | MOLEX 22-01-3037 housing, 08-50-0114 terminals |

## PIN DESCRIPTION

### J1 DATA CONNECTOR

| PIN | SIGNAL              | PIN | SIGNAL                |
|-----|---------------------|-----|-----------------------|
| 1   | RD (to touch panel) | 2   | Ground                |
| 3   | + 12 (optional)     | 4   | + 12 (optional)       |
| 5   | CTS                 | 6   | Reserved              |
| 7   | RTS                 | 8   | Reserved              |
| 9   | Ground              | 10  | TD (from touch panel) |

### J5, J6 POWER CONNECTOR

| PIN | SIGNAL   |
|-----|----------|
| 1   | + 12 VDC |
| 2   | GND      |

### J4 AUDIO FEED BACK CONNECTOR

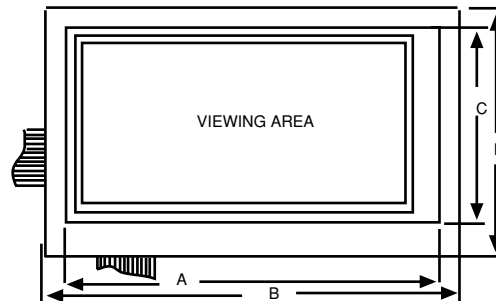
| PIN | SIGNAL                     |
|-----|----------------------------|
| 1   | GND                        |
| 2   | Beeper Signal (active low) |
| 3   | + 5 VDC                    |

## COMMAND SET (A bridged)

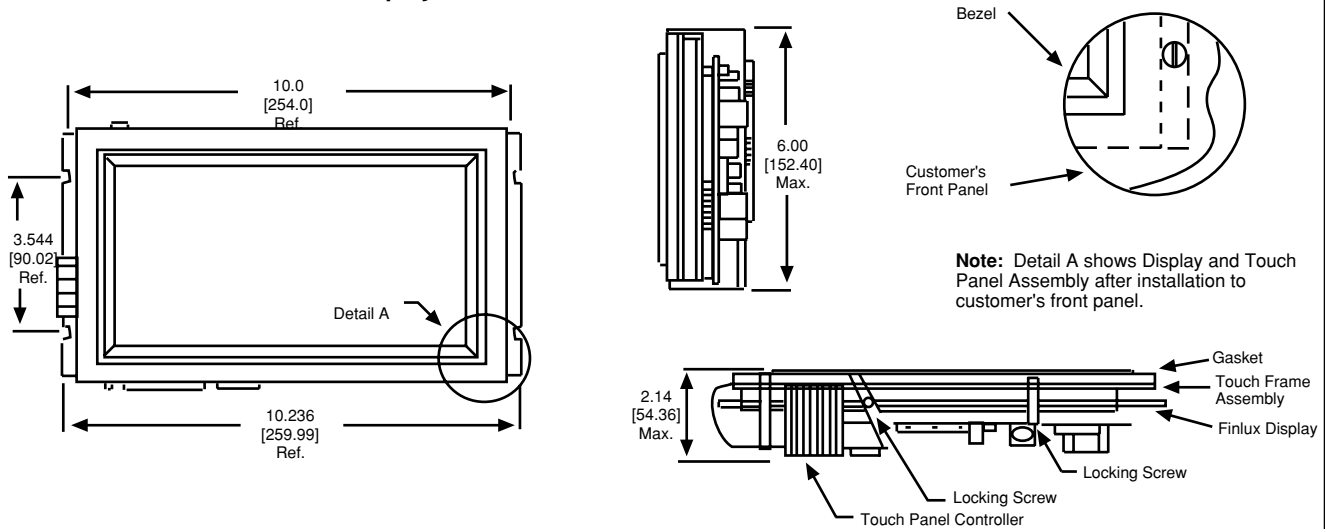
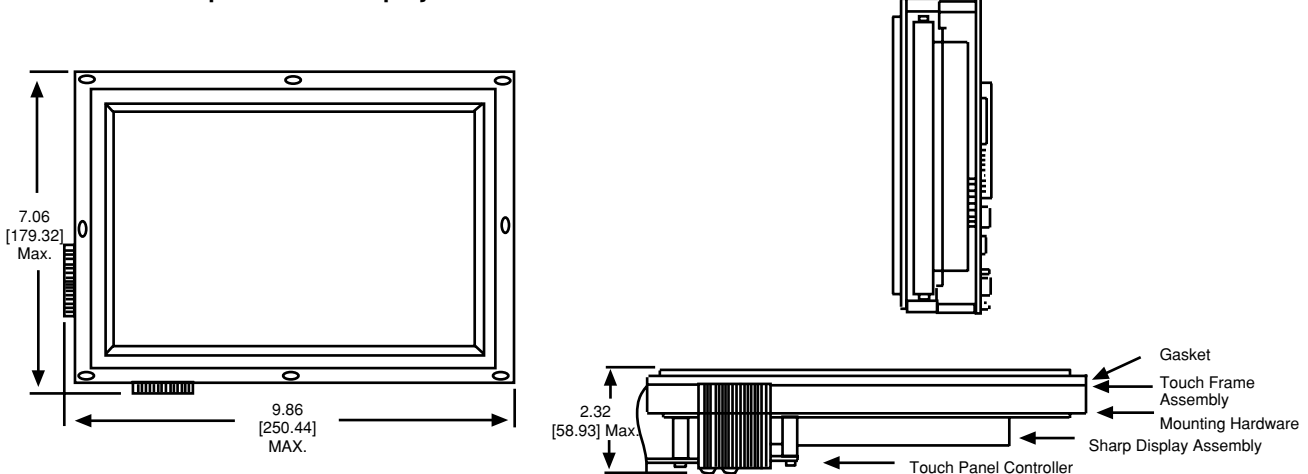
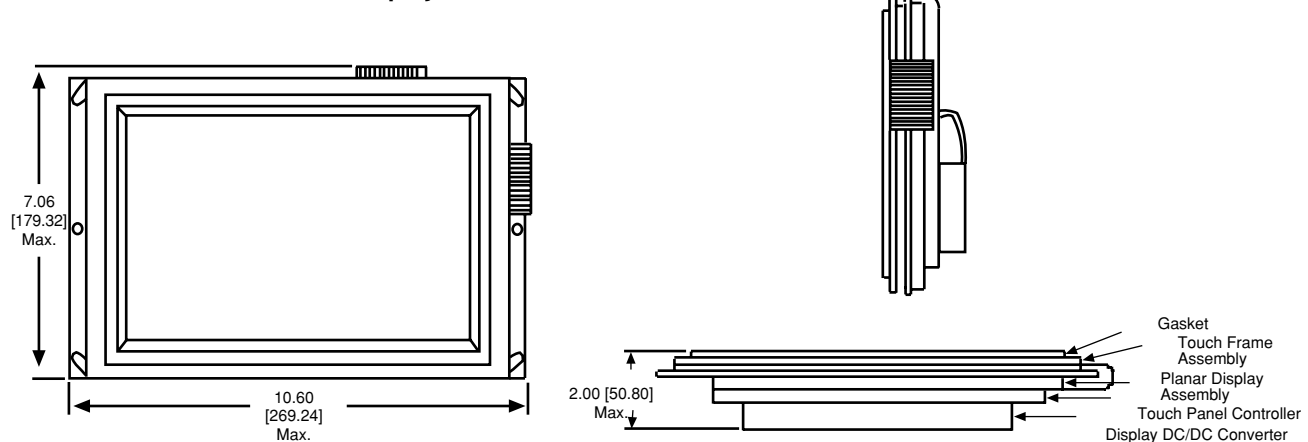
|       |                                                |
|-------|------------------------------------------------|
| 11H   | DC1, Ctl Q, XON Software handshaking           |
| 13H   | DC3, Ctl S, XOFF, Software handshaking         |
| 20H   | Enable EXIT point mode                         |
| 21H   | Disable EXIT point mode (default)              |
| 22H   | Enable ENTER point mode                        |
| 23H   | Disable ENTER point mode (default)             |
| 24H   | Enable CONTINUOUS mode/disable TRACKING        |
| 25H   | Disable CONTINUOUS mode (default) and TRACKING |
| 26H   | Enable touch panel                             |
| 27H   | Disable touch panel (default)                  |
| 28H   | Request Failed beam report                     |
| 29H   | Enable automatic report transfer               |
| 2AH   | Disable automatic report transfer (default)    |
| 2BH   | Request one coordinate report                  |
| 2CH   | Reset touch panel                              |
| 2EH   | Disable beeper (default)                       |
| 2FxxH | Sound beep, xx = duration (00H to FFH)         |
| 34H   | Enable TRACKING mode/disable CONTINUOUS        |

## DIMENSIONS in inches [millimeters]

### Touch Frame



| MODEL | B                  | C                 | D                 | VIEWING AREA                   |
|-------|--------------------|-------------------|-------------------|--------------------------------|
| 3216  | 9.608<br>[244.04]  | 4.86<br>[123.44]  | 5.67<br>[144.02]  | 7.9 x 4.1<br>[200.66 x 104.14] |
| 3220  | 9.748<br>[247.60]  | 6.238<br>[158.45] | 6.950<br>[176.53] | 8.0 x 5.2<br>[203.20 x 132.08] |
| 3224  | 9.680<br>[246.0]   | 6.687<br>[169.85] | 7.086<br>[179.98] | 7.8 x 5.9<br>[198.12 x 149.86] |
| 3526  | 10.404<br>[264.26] | 7.311<br>[185.70] | 7.532<br>[191.31] | 8.6 x 6.4<br>[218.44 x 162.56] |

**DIMENSIONS** in inches [millimeters]**TIP 3216 with Finlux 512 x 256 Display****TIP 3220 with Sharp 640 x 400 Display****TIP 3220 with Planar 640 x 400 Display**

Contact Factory for Models not Shown.