TS3 Series

VarTech's industrial-grade, gasket sealed ToughStation series of monitors and computers are available in 10.4” to 43” screen sizes and constructed of 316 stainless steel or black powder-coat aluminum.

The rugged display’s fully sealed enclosure is corrosion and moisture resistant for use in work environments that require frequent washdowns and chemical sanitation. Shock and vibration resilient components and harnessed cables reduce strain on internal parts yielding additional ruggedness to the overall design.

This series is available with several powerful embedded computer options for continuous use in demanding HMI processes throughout many industrial applications.

**Standard features:**
- Industrial-grade LED back-lit LCD
- Mounting configuration: panel with studs, console, console extreme, mounting tabs, pedestal, VESA, Res/PCAP/AT, or standard RAM
- Enclosure construction: fully sealed, NEMA 4x (IP66) 316 stainless steel or NEMA 4 (IP65) black powder-coat aluminum enclosure
- Available touchscreens: resistive, PCAP, and ArmorTouch glass-on-film resistive touch
- Touchscreen interface: USB or serial connections
- Protective window: protective overlay mounted to the front of the LCD or touchscreen
- Power input: 12 VDC, 9-36 VDC, or 90-264 VAC internal power supply

**Available size and specification chart:**

<table>
<thead>
<tr>
<th>Size</th>
<th>VESA/RAM &amp; Mounting Tab Dimensions**</th>
<th>Panel/Console &amp; Console Extreme Dimensions**</th>
<th>Brightness</th>
<th>Resolution</th>
<th>Touchscreen</th>
<th>Viewing Angle</th>
<th>Contrast</th>
<th>Aspect Ratio</th>
<th>Power Consumption (Calculated at 12 V DC)</th>
<th>Approx. Weight † (Stainless Steel)</th>
<th>Approx. Weight † (Aluminum)</th>
<th>Maximum I/O Ports (Including Power)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.4”</td>
<td>12.9 x 7.5 x 3.28</td>
<td>13.9 x 11.7 x 3.28</td>
<td>400 nits</td>
<td>SVGA 800 x 600</td>
<td>Res/PCAP/AT</td>
<td>80°/80°/80°/80°</td>
<td>1000:1</td>
<td>1000:1</td>
<td>32 W</td>
<td>≈ 12.9 Lbs</td>
<td>≈ 9.9 Lbs</td>
<td>8</td>
</tr>
<tr>
<td>12”</td>
<td>13 x 10.75 x 3.28</td>
<td>14.9 x 12.7 x 3.28</td>
<td>400 nits</td>
<td>XGA 1024 x 768</td>
<td>Res/PCAP</td>
<td>85°/85°/85°/85°</td>
<td>700:1</td>
<td>700:1</td>
<td>32 W</td>
<td>≈ 13.9 Lbs</td>
<td>≈ 11.9 Lbs</td>
<td>8</td>
</tr>
<tr>
<td>12.1” wide</td>
<td>13.7 x 10.15 x 3.28</td>
<td>15.7 x 12.13 x 3.28</td>
<td>500 nits</td>
<td>WXGA 1280 x 800</td>
<td>Res</td>
<td>85°/85°/85°/85°</td>
<td>700:1</td>
<td>700:1</td>
<td>32 W</td>
<td>≈ 14.9 Lbs</td>
<td>≈ 12.9 Lbs</td>
<td>8</td>
</tr>
<tr>
<td>15”</td>
<td>15.3 x 12.38 x 3.19</td>
<td>17.3 x 14.36 x 3.19</td>
<td>400 nits</td>
<td>XGA 1024 x 768</td>
<td>Res/PCAP/AT</td>
<td>80°/80°/80°/80°</td>
<td>600:1</td>
<td>600:1</td>
<td>12 W</td>
<td>≈ 17 W</td>
<td>≈ 12 W</td>
<td>16</td>
</tr>
<tr>
<td>17”</td>
<td>17 x 14.5 x 3.21</td>
<td>18.9 x 16.48 x 3.21</td>
<td>350 nits</td>
<td>SXGA 1280 x 1024</td>
<td>Res/PCAP/AT</td>
<td>80°/80°/80°/80°</td>
<td>800:1</td>
<td>800:1</td>
<td>12 W</td>
<td>≈ 17 W</td>
<td>≈ 12 W</td>
<td>16</td>
</tr>
<tr>
<td>19”</td>
<td>18.5 x 15.38 x 3.19</td>
<td>20.4 x 17.36 x 3.19</td>
<td>350 nits</td>
<td>SXGA 1280 x 1024</td>
<td>Res/PCAP/AT</td>
<td>85°/85°/85°/85°</td>
<td>1000:1</td>
<td>1000:1</td>
<td>12 W</td>
<td>≈ 20 W</td>
<td>≈ 14.9 Lbs</td>
<td>16</td>
</tr>
<tr>
<td>21.5” wide</td>
<td>22.02 x 14.35 x 3.53</td>
<td>23.99 x 15.98 x 3.53</td>
<td>300 nits</td>
<td>SXGA 1280 x 1024</td>
<td>Res/PCAP/AT</td>
<td>89°/89°/89°/89°</td>
<td>500:1</td>
<td>500:1</td>
<td>25 W</td>
<td>≈ 24 W</td>
<td>≈ 25 Lbs</td>
<td>32</td>
</tr>
<tr>
<td>24”</td>
<td>24.43 x 15.52 x 2.90</td>
<td>26.41 x 17.5 x 2.9</td>
<td>300 nits</td>
<td>SXGA 1280 x 1024</td>
<td>PCAP/AT</td>
<td>89°/89°/89°/89°</td>
<td>500:1</td>
<td>500:1</td>
<td>25 W</td>
<td>≈ 27 W</td>
<td>≈ 22 Lbs</td>
<td>32</td>
</tr>
<tr>
<td>32”</td>
<td>31.34 x 19.51 x 3.9</td>
<td>33.32 x 21.34 x 3.9</td>
<td>500 nits</td>
<td>SXGA 1280 x 1024</td>
<td>PCAP/AT</td>
<td>89°/89°/89°/89°</td>
<td>3000:1</td>
<td>3000:1</td>
<td>25 W</td>
<td>≈ 30 W</td>
<td>≈ 44.9 Lbs</td>
<td>32</td>
</tr>
<tr>
<td>43”</td>
<td>41.38 x 25.35 x 3.57</td>
<td>NA</td>
<td>500 nits</td>
<td>SXGA 1280 x 1024</td>
<td>NA</td>
<td>89°/89°/89°/89°</td>
<td>3000:1</td>
<td>3000:1</td>
<td>25 W</td>
<td>≈ 66 W</td>
<td>≈ 70 Lbs</td>
<td>43</td>
</tr>
</tbody>
</table>

*Sunlight readable LCD
**Available in swing arm mount
***For solutions with heat sink, add 1.062” to depth (D)
†Resistive touch, PCAP – projective capacitive touch, and AT – ArmorTouch glass-on-film resistive touch
LCD controller board specifications:

<table>
<thead>
<tr>
<th>Option</th>
<th>Resolution</th>
<th>Available Video I/O Ports</th>
<th>Horizontal/Vertical Scan</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>Up to 1440 × 900, 8-bit</td>
<td>1 × DVI, 1 × VGA</td>
<td>60 Hz up to 1440 × 900</td>
</tr>
<tr>
<td>B+</td>
<td>Up to 1600 × 1200, 8-bit</td>
<td>1 × DVI, 1 × VGA, 1 × Composite (PAL/NTSC)</td>
<td>60 Hz up to 1600 × 1200</td>
</tr>
<tr>
<td>C</td>
<td>Up to 1920 × 1200, 8-bit</td>
<td>1 × HDMI, 1 × Display Port, 1 × VGA</td>
<td>60 Hz up to 1920 × 1200</td>
</tr>
<tr>
<td>D</td>
<td>Up to 1920 × 1200, 10-bit</td>
<td>1 × HDMI, 1 × DVI, 1 × VGA, 1 × Composite (PAL/NTSC)</td>
<td>60 Hz up to 1920 × 1200</td>
</tr>
</tbody>
</table>

Non-standard controller boards and I/O ports available depending on panel size. Please inquire.

* Fanless operation available

Standard motherboard specifications:

<table>
<thead>
<tr>
<th>Option</th>
<th>Processor</th>
<th>Memory</th>
<th>Storage Drive</th>
<th>Operating System</th>
<th>Available I/O Ports</th>
</tr>
</thead>
<tbody>
<tr>
<td>E+</td>
<td>Intel Atom E3845</td>
<td>Up to 8 GB</td>
<td>1 × SATA-300, 1 × CFAST</td>
<td>Win 7: 32/64-bit, Win 10: 32/64-bit</td>
<td>1 × RS-232/422/485, 2 × USB 2.0, 2 × LAN</td>
</tr>
<tr>
<td>F+</td>
<td>Intel Celeron J1900</td>
<td>Up to 8 GB</td>
<td>1 × SATA-300, 1 × CFAST</td>
<td>Win 7: 32/64-bit, Win 10: 32/64-bit</td>
<td>1 × RS-232/422/485, 2 × USB 2.0, 2 × LAN</td>
</tr>
<tr>
<td>G+</td>
<td>i5-7300U</td>
<td>Up to 16 GB</td>
<td>1 × SATA-300, 1 × mSATA/SIM</td>
<td>Win 10: 64-bit</td>
<td>2 × RS-232/422/485, 4 × USB 3.0, 2 × LAN</td>
</tr>
<tr>
<td>H+</td>
<td>Celeron G3900TE, i3-6100TE, i5-6500TE, i7-6700TE</td>
<td>Up to 32 GB</td>
<td>1 × SATA-600</td>
<td>Win 10: 64-bit</td>
<td>1 × RS-232/422/485, 3 × USB 3.0, 1 × USB 2.0, 2 × LAN</td>
</tr>
</tbody>
</table>

Non-standard motherboards and processors available depending on panel size. Please inquire. Motherboard selection may affect operational temperature

Available monitor options:

- Dimming: manual front dimmer dial – 1000:1 dimming ratio
- Optical bonding (VBOND): adhering a cover glass, protective overlay, or touchscreen to the front surface of the LCD using an optical-grade silicone to increase solar reflectivity and ruggedness.
- OSD button placement: OSD membrane control buttons can be mounted in alternate locations on front or rear of the display
- Private labeling: logo or corporate identity for OEM/VAR applications
- Display options: USB failover, auto-dimming, Bluetooth control, IR remote, programmable hotkeys, RS232 brightness control, PIP, audio, wired remote OSD, integrated KVM extender
- Coatings: custom powder-coats, paint, and chemical resistant finishes
- Legacy video support: 15 kHz to 30 kHz, and SOG/composite/separate horizontal and vertical sync
- Sealed IP66 access compartment: for optional field accessible peripherals
- Available accessories: glare protection hood, keyboard bracket

Environmental Functional Upgrade Packages available. See next page.

Available computer options:

- Wireless connectivity: Bluetooth, WiFi, integrated router/WiFi repeater
- Storage: HDD, SSD, removable drives, various capacities, multiple drives
- Expansions: PCI, PCIe, mPCIe, M.2, SIM card slot
- Fanless design: solid-state components
- Operating system: Windows 10 Professional – 32 & 64-bit, Windows 10 Enterprise, Windows 7 – 32 & 64-bit, Linux (select versions of Linux supported)
- ThinManager® thin client management
- 1 × VGA, 1 × HDMI
- Additional and/or alternate I/O ports available: Please contact your sales representative

All available options are subject to mechanical design limitations. Please inquire.

Available I/O connectors: bottom or rear exit connectors

Sealed IP68: general purpose connector for ToughStation fully sealed series

Gland rated up to IP69K: standard sealed captive I/O cables for our hazardous area series

Available ruggedized I/O connectors:

M8/M12/M23: industrial automation, vibration and shock-resistant

MIL-DTL 38999: military standard, sealed, vibration and shock-resistant quick-coupling circular locking connectors

Mounting option examples:

- Panel with studs
- Mounting tab
- Console and console extreme
- VESA or standard RAM
- Pedestal (optional pedestal designs avail, please inquire.)
- Swing arm/swivel
Environmental Functional Upgrade Packages:
VarTech’s Environmental Functional Upgrade Packages allow for custom COTS solutions using standard feature sets.

<table>
<thead>
<tr>
<th>High Bright Sunlight Readable Package</th>
<th>Component Ruggedization Package</th>
<th>Extreme Temperature Package (-40° C to 70° C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• High luminance LED backlights</td>
<td>• Vibration resistant low-profile video controller board or motherboard</td>
<td>• Integrated heater and thermostat</td>
</tr>
<tr>
<td>• Proprietary film stack</td>
<td>• Low profile cable assemblies/connections</td>
<td>• Uninterrupted wide temperature dual PSU system</td>
</tr>
<tr>
<td>• Optical bonding (VBOND)</td>
<td>• Potted components where applicable</td>
<td>• Wide temperature LCD panel</td>
</tr>
<tr>
<td>• Anti-reflective coatings</td>
<td>• Vibration dampening standoffs</td>
<td>• Harsh duty video controller board or motherboard/SSD/RAM</td>
</tr>
<tr>
<td>• Brightness levels ranging from 700 nits to 1500 nits (depending on screen size)</td>
<td>• Optical bonding of protective window or touchscreen to LCD</td>
<td>• Optional heat-reflective white powder-coat</td>
</tr>
</tbody>
</table>
| • Advanced wide range dimming ratio – from 100% to true black | • MIL-DTL 38999 I/O connectors (not available on hazardous area models) | Designed to meet by using best industry standards: tolerances specified by select subcategories of MIL-STD 810F and/or DEFSTAN 00-35 inclusive of Part 3 Issue 4
| • Optional manual dimming knob, push-button dimmer, or auto-dimming | |

EMI/EMC 461 AS Package
- All Surface Ingress Protection Coupled with an All Surface Faraday Cage Design
- Integrated 8 Ohm ITO/100 OPI Stainless Steel Mesh Protective Window or Touchscreen equipped with Conductive U Busbar (8 Ohm ITO for Surface Ships Limits/ 100 OPI SS Mesh for Army Ground Limits)
- Chromated Metal and EMI Copper Conductive Tape to assure conductivity of Conductive Window/Busbar and Enclosure
- Enhanced EMI Conductive Gaskets for MIL-STD 461 protection while maintaining seal up to IP67
- MIL-DTL 38999 connectors with backshell assembly
- Cable Braiding, Ferrites and in-line Bandpass filters where applicable
- CE101, CE102, CS101, CS106, CS114, CS115, CS116, RE101, RE102, RS101, RS103 (Designed to Meet based on similar VarTech Systems Designs)

Field Serviceable Peripheral Compartment
- IP65 sealing
- Available on ToughStation sizes from 15” to 43”
- Auxiliary DC power terminal block (available voltage/ampere varies with design)
- Exterior connectors/cables can be routed to a sealed compartment
- Bulkhead connectors, exterior surface connectors
- Allows for aftermarket support of KVMs, video amplifiers, SFF PCs, storage drives

Vandal/Impact Resistant Package
- 6 mm impact-resistant protective overlay glass
- BH abrasion-resistant surface
- Chemical stain resistant
- Tamper-proof conduit connectors for VESA applications
- Optional optically bonded PCAP touchscreen

ToughStation core model number breakdown:
The model number will be followed by an engineering configuration number and will be issued based on selected options and specifications. Please Inquire.

![Diagram](attachment://diagram.png)

Over 30 Years of Rugged HMI and Industrial Computer Manufacturing Experience