

CTC Workstations

PowerStation

Industrial PCs



The Shortest Distance Between Man and Machine



CTC Quality

Designed, Manufactured And Tested
To Be Factory-Floor Rugged



Class I Div 2



Tests We Perform ...

ELECTROMAGNETIC COMPATIBILITY (EMC) TESTING

EMISSIONS

EN55011 CISPR 11 RADIATED

EMISSIONS GROUP 1 CLASS A

Limits and methods of measurement of electromagnetic disturbance characteristics of industrial, scientific, and medical (ISM) radio-frequency equipment, Second Edition 1990-09. Phase and Neutral emissions tested throughout frequency range of 30 MHz to 1 GHz in both horizontal and vertical polarizations.

EN55011 CISPR 11 CONDUCTED EMISSIONS GROUP 1 EQUIPMENT

EMI receiver scanned the frequency range from 150 kHz to 30 Mhz using a bandwidth of 10 kHz and a peak detector. Worst case emissions verified below quasi-peak limit plus error of 73 dBµV.

IMMUNITY

IEC 1000-4-3 RADIATED IMMUNITY

Tested to a radiated electromagnetic field of 10 V/m in the frequency band of 80 Mhz to 1 GHz as defined in severity Class 3 (Severe electromagnetic radiation environments, such as levels typical of high power transceivers in close proximity to the control equipment.) Applied signal was amplitude modulated with a 10 kHz signal at 80% modulation depth with a sweep frequency no faster than 1.5×10^{-3} decades/second. Radiating and receiving antennas were oriented in both horizontal and vertical polarizations.

IEC 1000-4-2 ELECTROSTATIC

DISCHARGE Test fixture equipped with human body model 150 Ω 150 pf discharge network. Tests conducted in both air and contact discharge modes to severity level 4 of IEC standard (8 kV contact discharge / 15 kV air discharge) to both the PowerStation™ and vertical and horizontal coupling planes a minimum of 10 times per test point.

IEC 1000-4-4 FAST TRANSIENT/BURST

SUSCEPTIBILITY Level 4 Severe

Industrial Environment defined as:

- no fast transient suppression in the control and power circuits which are switched by relays and contactors
- no separation of the industrial circuits from other circuits associated with environments belonging to higher severity levels
- use of multicore cables in common for control and signal lines

At CTC Parker, we take pride in delivering a quality workstation that you can count on to operate 24 hours a day – regardless of harsh factory floor environments. CTC Parker's "Build Quality In" philosophy is evident throughout the entire engineering and manufacturing process...from the very beginning of the product design process up to the time the product is shipped out the door to the customer. Perhaps that's why approval agencies have stated that CTC has one of the highest levels of self assessment in the industry.

PowerStation workstations are designed to meet the challenge of passing more tests in one day than most other units see in a lifetime. CTC PowerStations are designed and tested to withstand conditions occurring in a factory setting including electrical noise, mechanical shock and vibration, high temperature and humidity levels. This attention to detail is carried out into all areas of the design including EMI (electromagnetic immunity), detailed thermal, shock and vibration analysis and hosedown testing.

Quality goes beyond testing the product to ensure robustness. It also involves selection of the right components and technology that fit an industrial environment. This is why CTC Parker has instituted an unsurpassed supplier relationship process. This process makes true partners of our component suppliers by ensuring the use of the right components, including design reviews and quarterly performance evaluation with the supplier. In addition, CTC's manufacturing team tests each and every unit before it is shipped using a unique 100% system "burn-in" in which the unit is thermal and power cycled over a period of time. It is quality-driven testing like this that builds in the reliability you need on the factory floor.

- Integrated Development Teams
- Qualified Component Selection
- Supplier Certification
- Continuous Design Reviews
- Internal Independent Product Testing
 - Environmental Evaluation
 - Power Supply Testing
 - System Functionality
 - Commitment to Continuous Improvement
 - Agency Certification

We Test Because You Invest

- no separation between power supply, control, signal and communication cables

Test parameters: 5 kHz for output < 2.0 kV, 2.5 kHz for output > 2.0 kV. Burst duration: 15 ms. Burst Period: 300 ms. Test time: 99 s. Test voltage on power supply 4 kV (5 ns rise time) on I/O, communication lines 2 kV (5 ns rise time). Test applied in both negative and positive polarity to Line, Neutral, Line and Neutral, Ground and communication ports.

IEC 1000-4-5 SURGE IMMUNITY

Class 3 defined as:

- installation is earthed to the common earthing system of the power installation which can be essentially subjected to interference voltages generated by the installation itself or by lightning
- current due to earth faults, switching operations and lightning in the power installation may generate interference voltages with relatively high amplitudes in the earthing system
- protected electronic equipment and less sensitive electric equipment are connected to the same power supply network

Test parameters: Surge 2 kV Open Circuit Voltage; Front time = 1.2 μ s; Time to half = 50 μ s. Surge applied between each input power phases and ground and from the I/O cable shield to ground in both positive and negative surges. The surges were synchronized with the power input phase at 0°. The time between each surge was at least 1 min.

IEC 1000-4-11 VOLTAGE DIPS INTERRUPTIONS AND VARIATION Dips 30% dip for 10 ms (1/2 cycle) unit must experience no abnormal operation 60% dip for 100 ms (5 cycles). Unit must power off and on with no abnormal operation.

Interruptions > 95% input power interruption for 5 seconds. Unit must power off and on with no abnormal operation.

Variations (brownout and high line)

Procedure 1: Voltage dip of 10% applied for 15 minutes - no abnormal operation
Procedure 2: Voltage increase of 10% applied for 15 minutes - no abnormal operation.

CONDUCTED IMMUNITY All interconnecting cables on the PowerStation™ tested for immunity to conducted radio frequencies in the range 150 kHz to 80 Mhz at a level of 124 dB μ V with an amplitude modulation at 80% by a 1 kHz tone.

IEEE 472 SURGE WITHSTAND

CAPABILITY Test Parameters: To 3.5 kV continuous burst for at least 1 min. on all power conductors in both Common and Transverse modes.

NEMA SHOWERING ARC Test

Parameter: Continuous broad band noise generator that generates 1.5 kV waveform that is applied to power input and communication lines.

MECHANICAL / PACKAGING TESTING

VIBRATION

IEC 68-2-6 Sine vibration sweep (operational mode) from 10 Hz to 150 Hz at the following levels: Displacement of 1.5 mm (0.06") peak-to-peak from 10 to 18 Hz and an acceleration of 1G from 18Hz to 150 Hz. The sweep was performed for 30 minutes in each of the three axes while monitoring for resonance. The unit is then subjected to a dwell at all of the found resonance areas.

MIL-STD-810D Method 514.3 Random

Vibration Transportation Test: Test Parameters: 10 to 500 Hz at the following levels:

10 Hz 0.015 (G²/Hz)
40 Hz 0.015 (G²/Hz)
500 Hz 0.00015 (G²/Hz)

The random vibration is applied to the unit in each of the three orthogonal axes for a duration of 1 hour and simulates 1000 miles of transport.

SHOCK

IEC 68-2-27 Half Sine Shock Test:

Test Parameters:
Operating - 10.0 G, 11 ms duration
Non-operating - 30.0 G, 11 ms duration
Three pulses applied in both the positive and negative directions for each of the three orthogonal axes.

NATIONAL SAFE TRANSIT ASSOCIATION PROJECT 1A PACKAGED DROP TEST

Packaged products that weigh between 21 to 40.99 pounds are dropped from a height of 24 inches. No damage to the product may result and the shipping container must still afford reasonable protection to the contents.

ENVIRONMENTAL

TEMPERATURE

Thorough thermal analysis is performed on the design of each PowerStation product to verify manufacturers recommended operating temperatures are not exceeded. CTC follows a standard derating guideline.

TEMPERATURE / HUMIDITY

PowerStation submitted for temperature/humidity duration test at local test facility (Environmental Screening Services Corporation). Test Parameters: duration 10 days, temperature 0° to 50°C, humidity level 95% non condensing.

DESIGNED FOR NEMA 4

Each PowerStation faceplate design is tested to ensure a tight seal is maintained for Nema hosedown environments. A high pressure hose is used to spray water directly on the faceplate of the unit. Each edge of the unit including outside and inside edges are subjected to the high pressure water stream from a distance of 6 inches for a duration of 4 minutes.

CHEMICAL RESISTANCE

The faceplate of the PowerStation can resist with no visible effect, the following chemicals (it is not recommended that these chemicals be applied for long periods of time or in excess quantity).

CHEMICAL RESISTANCE

Acetone
MEK
Toluene
Methylene Chloride
Isopropyl Alcohol
Xylene
Hexane
Butyl Cellosolve
Cyclohexanone
Trichloroethylene
Ethanol
Methanol
Nitric Acid 10%

Sulfuric Acid 10%
Hydrochloric Acid 10%
Acetic Acid 10%
Phosphoric Acid
Sodium Hydroxide 10%
Carbon Tetrachloride
Potassium Hydroxide
Ammonia Water 10%
Sodium Chloride 26%
Zinc Chloride 81%
Cottonseed Oil
Glycerin
Grease

Motor Oil
Gasoline
Machine Oil
Salad Oil
Silicone
Silicone Grease G31
Kerosene
Gas Oil
Silicone Oil
Engine Oil
Cleanser

PowerStation

The Scalable, PC-Based Control Workstation Family

Removable Compact FLASH

All CTC PowerStations come equipped with many helpful features such as removable Compact FLASH for software storage. This non-volatile solid state technology offers significantly higher reliability than conventional hard drive systems while simplifying development and maintenance support.

It's as quick as 1-2-3...

1. Create your changes on a PC, copy to flash cartridge and send to customer. Compact flash cartridge fits into standard PCMCIA adapter.

SEND FLASH CARTRIDGE OVERNIGHT TO CUSTOMER



2. Insert cartridge

3. POWER UP!

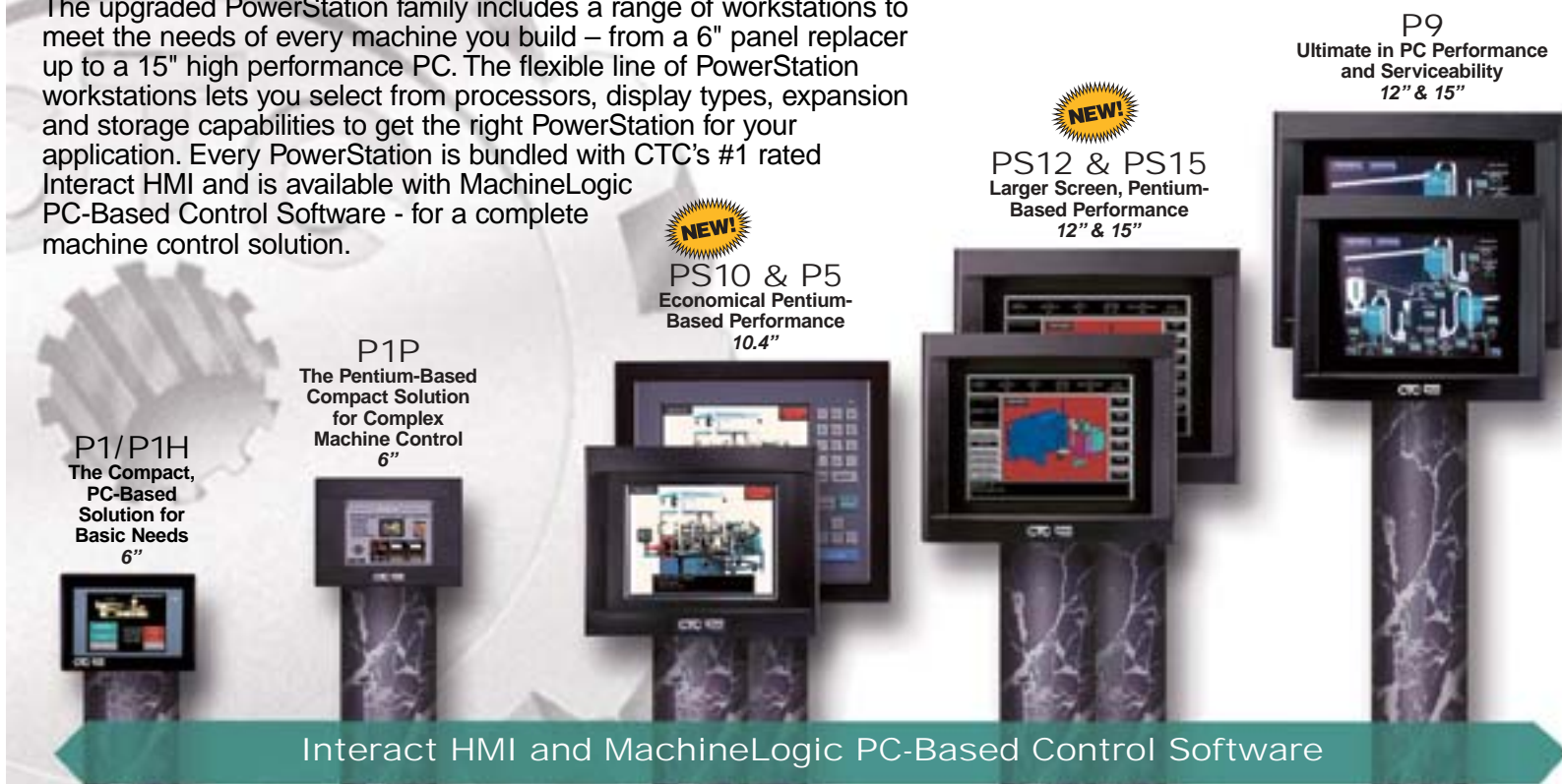
Built-in Ethernet Communications

PowerStations come standard with built-in 10/100 Base-T* Ethernet port so that you can take full advantage of Ethernet communications on the factory floor. Interact HMI software includes Ethernet drivers for Modbus TCP/IP, A-B PLCs, Compumotor 6K motion controllers and more, with OPC server applications for exchanging data with Windows systems.

* P1 units include 10 Base-T Ethernet port

A Bundled Solution For Every Machine You Build

The upgraded PowerStation family includes a range of workstations to meet the needs of every machine you build – from a 6" panel replacer up to a 15" high performance PC. The flexible line of PowerStation workstations lets you select from processors, display types, expansion and storage capabilities to get the right PowerStation for your application. Every PowerStation is bundled with CTC's #1 rated Interact HMI and is available with MachineLogic PC-Based Control Software - for a complete machine control solution.



Display Size	6"	6"	10.4"	12" & 15"	12" & 15"	12" & 15"
	P1/P1H	P1P	PS10/P5 (PC10/PC5)	PS12 (PC12)	PS15 (PC15)	P9 (PC9)
MODEL	P1/P1H	P1P	PS10/P5 (PC10/PC5)	PS12 (PC12)	PS15 (PC15)	P9 (PC9)
Flat Panel Display	1/4 VGA (5.7")	5.7"	VGA (10.4")	SVGA (12.1")	XGA (15.1")	12" SVGA or 15" XGA
Monochrome	LCD	N/A	LCD (9.4")	N/A	N/A	N/A
Color	STN	1/4 VGA STN, VGA TFT	TFT	TFT	TFT	TFT
CPU's	80386 SX/40	Pent/166	Pent/266	Pent/266	Pent/266	Celeron/566; Pent III/850
System Mem. (max)	16MB	64MB	256MB	256MB	256MB	512MB
Storage Memory						
Compact FLASH (max)	128MB	128MB	128MB	128MB	128MB	128MB
Hard Drive	N/A	N/A	Up to 20GB	Up to 20GB	Up to 20GB	Up to 6.4GB
Floppy Drive	N/A	N/A	1.44 MB (rear and panel mount)	1.44 MB (rear and panel mount)	1.44 MB (rear and panel mount)	1.44 MB
CD-ROM	N/A	N/A	Yes	Yes	Yes	Yes
I/O Ports						
Serial	(1) RS232/422/485; (1) RS232	(1) RS232/422/485; (1) RS232	(1) RS232/422/485; (2) RS232	(1) RS232/422/485; (2) RS232	(1) RS232/422/485; (2) RS232	(1) RS232/422/485; (3) RS232
Parallel	IBM Enhanced/25 Pin D-sub	IBM Enhanced/25 Pin D-sub	IBM Enhanced/25 Pin D-sub	IBM Enhanced/25 Pin D-sub	IBM Enhanced/25 Pin D-sub	IBM Enhanced/25 Pin D-sub
Expansion slots	PC/104	PC/104	PC/104, ISA & PCI	PC/104, ISA & PCI	PC/104, ISA & PCI	ISA/PCI or ISA Only
Ethernet	10Base-T	10/100Base-T	10/100Base-T	10/100Base-T	10/100 Base-T	10/100 Base-T
User Interface						
Function Key	On Screen	On Screen	On Screen, 40 (20 + Shift) Keys on P5	On Screen	On Screen	On Screen
Touchscreen	Resistive	Resistive	Resistive	Resistive	Resistive	Resistive
Keyboard/Mouse	Yes	Yes	Yes	Yes	Yes	Yes
Power						
AC	External AC Adapter opt.	External AC Adapter opt.	External AC Adapter opt.	External AC Adapter opt.	External AC Adapter opt.	90-260 VAC (120W)
DC	18-30 VDC (25W)	18-28 VDC (25W)	18-28 VDC (78W)	18-28 VDC (78W)	18-28 VDC (78W)	N/A
Size (H x W x L)	7.7" x 5.6" x 3.2" 194.7 x 142.7 x 81 (mm)	8.7" x 6.3" x 3.25" 221 x 160 x 82.5 (mm)	PC/104: 11.02" x 13.78" x 4.29" 280 x 350 x 109 (mm) ISA/PCI: 11.02" x 13.78" x 6.97" 280 x 350 x 177 (mm) (PS10 shown above. Consult factory for P5 dimensions)	PC/104: 12.11" x 15.06" x 5.64" 307 x 382 x 143 (mm) ISA/PCI: 12.11" x 15.06" x 8.32" 307 x 382 x 211 (mm)	PC/104: 13.31" x 16.81" x 6.16" 338 x 427 x 156 (mm) ISA/PCI: 13.31" x 16.81" x 8.57" 338 x 427 x 218 (mm)	12.1" x 15.1" x 10.0" 308 x 383 x 254 (mm) 13.3" x 16.8" x 10.0" 338 x 427 x 254 (mm)
Environmental						
Designed for	NEMA 4, 4X	NEMA 4, 4X	NEMA 4, 4X	NEMA 4, 4X	NEMA 4, 4X	NEMA 4, 4X
Agency Approvals	CE, UL/CUL	CE, UL/CUL	CE, UL/CUL	CE, UL/CUL	CE, UL/CUL	CE, UL/CUL
Class I Division 2	DC units only	DC units only	Yes	Yes	Yes	Yes
Temp Range* (°C)	0-45	0-45	0-50	0-50	0-50	0-50

NOTE: Certain features shown above are configurable. Consult factory for details.

Industrial PCs

Strength and Versatility

Remote System (RS) PowerStation



This Remote System (RS) version of PowerStation workstations gives you flexibility in designing your machine control project. The remote PC unit can be cable-connected to one of CTC's flat panel Industrial Monitors and mounted in a control enclosure for additional reliability and convenience. This option enhances the overall look of your machine with all the powerful hardware features of the PowerStation line, and can be bundled with CTC's Interact HMI software and MachineLogic PC-Based Control Software.

12" and 15" Industrial Monitors

- 12" SVGA (800 x 600)
15" XGA (1024 x 768)
- Advanced video image autosizing enhances lower resolution graphics
- Analog resistive touchscreen
- Serial touchscreen interface
- Other features include video frequency detect, optional cable lengths of up to 50' from the PC box. 24 VDC power (optional AC brick) and field replaceable bulbs



New Generation Industrial PCs

When you need a robust PC designed specifically for shop floor use, choose one of CTC's flat panel Industrial PCs. Not only are there a wide range of Industrial PC models to select from, but you can customize the PC with a variety of hardware options to meet the needs of your particular project.

Each unit includes features such as Compact FLASH storage and Ethernet network connectivity. All models have also been industrially tested and rated to provide a durable hardware platform for your factory floor applications.

These new Industrial PCs offer a durable, open solution for powering PC-based factory automation into the future. Available with 10", 12" and 15" displays; these units are rugged and powerful for machine control, offering a new level of reliability and serviceability for the plant floor. Not only are these new platforms designed and tested to suit the demanding environment of the factory, but they also provide a maintainable PC solution with features like field replacement bulbs, hard drive, CD-ROM and floppy drive. CTC industrial workstations feature the latest processor, display, bus, and storage technologies that will grow with your future needs.



MachineShop™

Integrating HMI and PC-Based Control



Project Management

MachineShop's Project Management is a simple, intuitive way to configure and manage automation projects. It conveniently collects configuration data and runtime files into a central location. By allowing MachineLogic and Interact projects to appear in a single, unified environment, development tasks are simplified.

INTERACT

Human-Machine Interface Software

The #1 Rated HMI Software Package

Interact is a feature-rich software package that can be tailored to meet the needs of any HMI project. It provides the ease of use of Windows for development, with the reliability of DOS in a run-time environment. Interact's event-driven kernel enables reliable, high-speed program execution.

Interact lets you build an application by selecting from a complete family of software modules, ranging from 3-D panel tools, to trending, networking and machine configuration.



INTERACT Development Screen

Parker Hannifin Corporation

Automation Group - CTC
50 W. TechCenter Drive • Milford, OH 45150
Phone (800) 233-3329 • Fax (513) 831-5042 • www.ctcusa.com
WB.11/01

PowerStation Transfer

Once an application has been developed, MachineShop's PowerStation Transfer manages and transfers files that are needed to create or update a runtime project. These convenient tools simplify the transfer process, so projects can go online quickly.

MachineLogic™

PC-Based Control

The "No Risk" PC-Based Control Solution

MachineLogic is a new type of control software that gives machine builders a no risk way to move from PLCs to PCs. It combines the reliability, familiarity and cost-effectiveness of PLCs with the open architecture and integrated development features of PC-based packages. MachineLogic is a reliable and affordable alternative to Windows NT/CE soft control solutions.



PowerStation

Bundled PC-Based Workstations



MachineLogic™ Development Screen

