KSeries

HOT RUNNER CONTROLS

athenacontrols.com

K-20 cabinet for up to 120 zones

K-10 cabinet for up to 60 zones

ATHENA
The Temperature Control Company

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U.S.A.

"Better by Design."

Today's demanding molding applications require a hot runner controller that you can rely on for precision control, ease of use, and day-to-day reliability. Equipment size is also an important issue when trying to minimize floor-space requirements. That's why Athena is pleased to introduce the new K Series, designed from the ground up with the needs of injection molders in mind.

The K Series of modular controllers are amazingly compact and very economical, especially on high zone counts. There are several control card options available, either with or without current measurement: 6 x 5A, 3 x 15A, or 2 x 20A zones output, with a 2 x 30A card coming soon. Cards can be ordered in any combination to suit the application. Cabinets are available in various sizes – 10, 20, 30, and 44 slots – which can run up to a maximum of 60, 120, 180, and 264 zones respectively. They have been designed with a cassette-type construction, which fits into an outside shell, making them suitable for mounting into a machine cabinet for even greater system integration.

The robust cabinet designs have an interlocked card access door and include current and ground fault interruption for maximum mold safety. Larger cabinets also have a rear access door. Control board LED indicators are visible through the front door window for additional diagnostic capability.

The Touchscreen console option offers the ultimate in operator usability and system functionality. Up to 20 tool settings may be stored for maximum flexibility. Setting changes are made quickly and simply for any single zone, range, or group. Zones are displayed as panels, 40 to a page, which are set by touch selection and entered via a calculator-style touch keypad. Tool configurations can be saved onto a standard floppy disk for off-line storage or transfer to another machine. The software gives you a greater insight into the molding process, with touch-interactive 3D graphs, displaying recorded data for any period over the last 24 hours.

Exploded CAD view of a modular K-20 cabinet for up to 120 zones, showing the simple casssette construction.

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"Color Touchscreen for Maximum Performance"
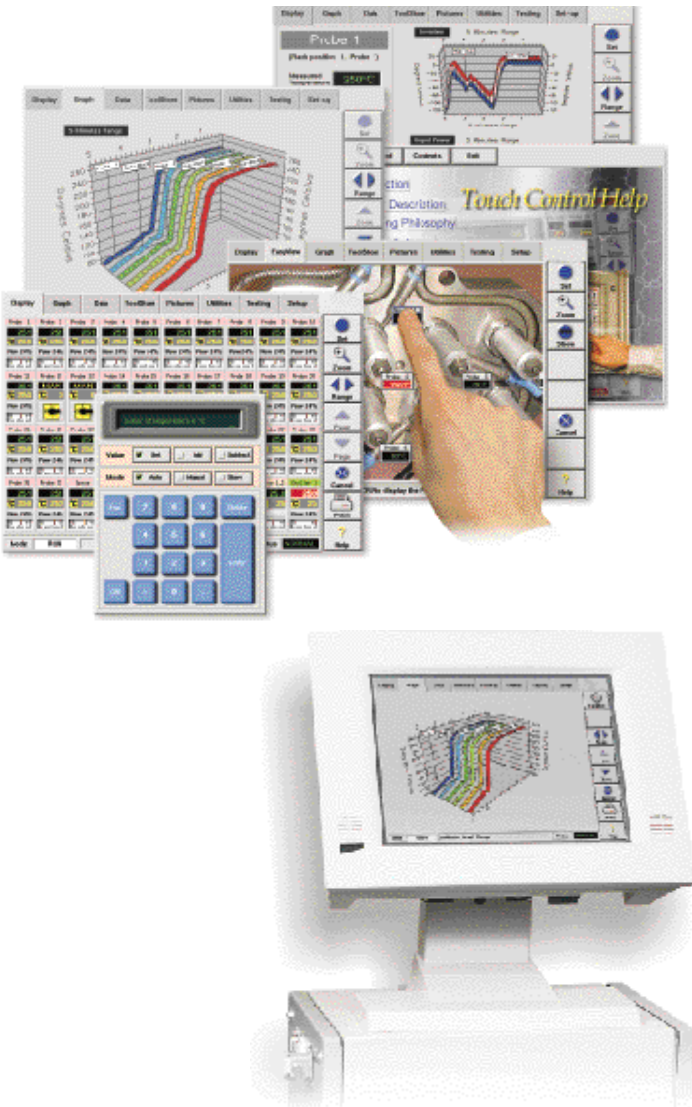
The Zoom page shows you more detail for a single zone, including deviation and power output graphs. The "Easyview" page, used in conjunction with the picture store facility, can be set up to show a photo of the mold, with live mini-panels displayed in the actual zone positions, for greater layout awareness.
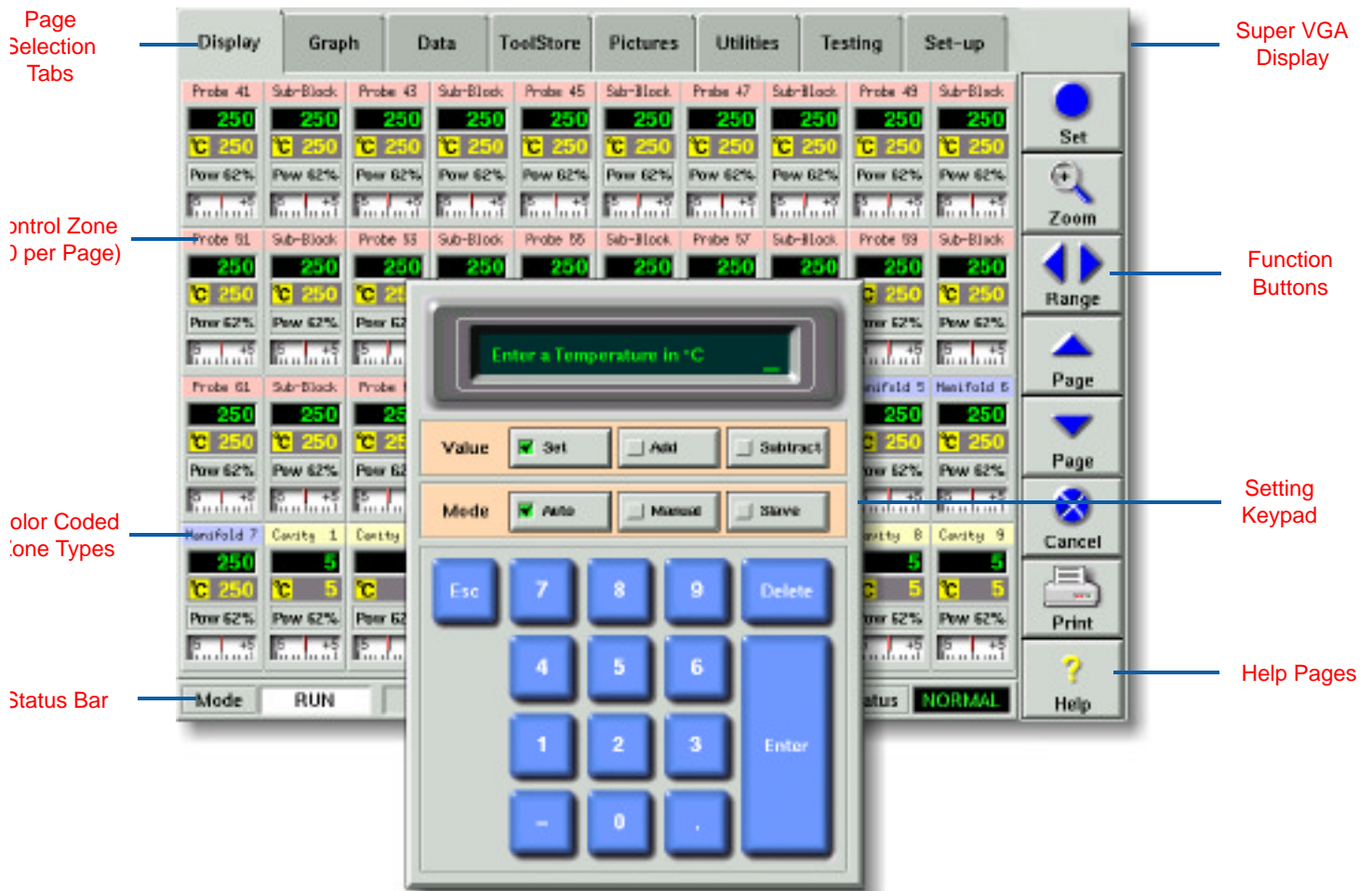
The Event Log is a useful feature which captures all occurrences of fault alarms, as well as setting or configuration changes, for diagnosis in the event of a molding problem. The diagnostics feature checks the mold for heater, thermocouple, and wiring faults, and can predict an imminent heater failure. A standard network connection enables web-browser remote monitoring from anywhere on your network or the Internet. The console also includes a comprehensive online help manual, as well as multi-language support.

For an economical solution up to 60 zones, the K-10 cabinet can be supplied with a monochrome display console, which has many advanced features to help you understand what's happening in the hot runner system under control. The software includes temperature graphs, mold diagnostics, settings storage, and much more. The back-lit LCD display uses a simple menu system, which is quick and easy to use, entering values via a wipe-clean keypad. A printer port is also supplied as standard.
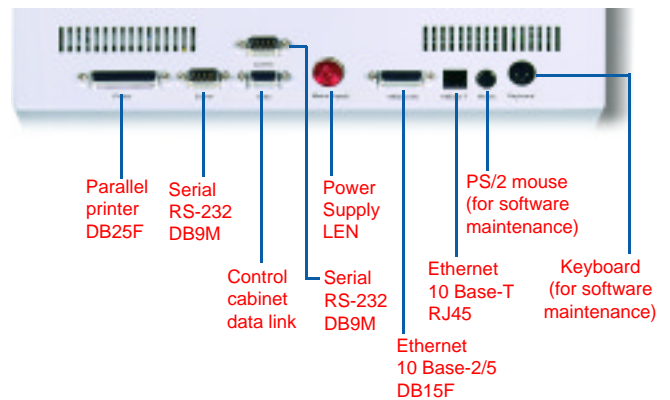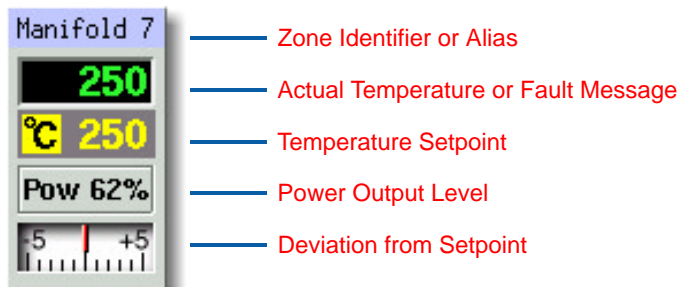
"...or Monochrome LCD Console for Maximum Economy"

"Operator Friendliness Moves to a New Level."

- Page Selection Tabs
- Super VGA Display
- Control Zone (0 per Page)
- Function Buttons
- Color Coded Zone Types
- Setting Keypad
- Status Bar
- Help Pages

Easy to follow visual prompts and 3-D selection buttons that move as you "press" them make setup and operation simple and virtually foolproof. Designed for maximum flexibility, the console comes network-ready, enabling remote operation.

- Zone Identifier or Alias
- Actual Temperature or Fault Message
- Temperature Setpoint
- Power Output Level
- Deviation from Setpoint

- Parallel printer DB25F
- Serial RS-232 DB9M
- Power Supply LEN
- PS/2 mouse (for software maintenance)
- Control cabinet data link
- Serial RS-232 DB9M
- Ethernet 10 Base-T RJ45
- Keyboard (for software maintenance)
- Ethernet 10 Base-2/5 DB15F

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Useful Software Tools Make Your Job Easier."

The Tool Store page allows you to quickly save and reload complete tool setups and settings. Everything is saved, including tool layout, zone names, temperature settings, and the results from the last tool test, for comparison. Settings can also be saved and restored from floppy disk or central network drive, if connected, for transfer to other controllers.

For those who relate better to columns of figures, we've included the data display information in spreadsheet format. Finger-sized scroll bars allow you to easily move around the sheet to see all available information about every control zone.

The main function of the Utilities page is to set the control modes. This includes Startup mode, which brings probes and manifolds up to temperature together. Shutdown mode and Standby mode which backs off heat to the probes by a set amount while idling.

Using a graphical representation of the control cabinet card racks, the Setup page allows the user to configure the console to handle a wide range of tools. This is factory set to suit the customer's initial requirements. Zone numbers can be given an alias to simplify the display page. For example, manifold zone 6 can be renamed to display as "Sprue" on the main page. Another feature is the ability to set limits on entering settings, using an administrator's password, to protect your tooling investment from accidental damage.

An essential function when maintaining a hot runner system is the tool Testing diagnostics page. Control zones are sequentially tested for incorrect or cross wiring, thermocouple integrity, heater open circuits, and other system faults. With the hardware diagnostic option fitted, the software can also track changes in heater resistance and ground leakage over time, to help predict imminent heater failure.
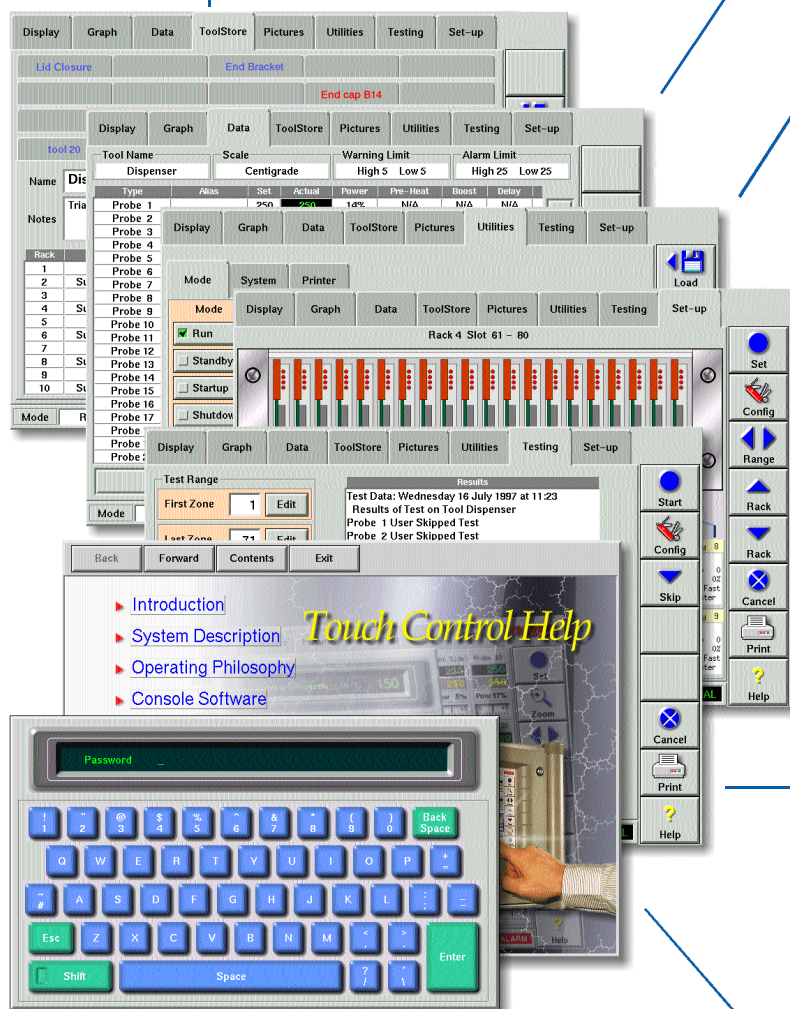
Entry of alphanumeric information for password entry, tool naming, and descriptions, etc., is made fast and easy with the Text Entry pad.

The complete user manual is always available in full color by selecting the Help button. This includes many illustrations and connection diagrams to assist the user with readily available information. The Help pages make use of an Internet standard HTML file format browser. Later versions of the software will also be able to browse company Intranet or Internet pages via the network.

"Set Values with a Touch of Your Finger..."

1 *Select the zones you wish to change.*

2 *Press the Set button.*



3 *Enter a temperature.*

With Athena's HRC-TSA Touchscreen Interface, you can quickly make settings and view the results. Just touch the zones you wish to change, touch the Set button, then enter the new value with the keypad. Several zones can be selected at once, if required. There is also a range button for selecting groups, rows or all zones at once.

The same simple operation is used to add or subtract values. This can be very useful, on startup for example, for adjusting a range of balanced settings up or down, without losing the relationship between values. The setting keypad also has mode selection for operating in one of three modes:

Auto - Normal closed loop operation using set temperatures.

Manual - Open loop operation using power values.

Slave - In the event of thermocouple failure you can elect to emulate the output of a similar closed loop zone.

If the software has been configured for running cycle-synchronized thermal gate probes, an additional button is displayed for setting tip boost parameters from the entry keypad in the same way.

Above all, the human interface has been designed to be as intuitive and simple to use as possible. Even first- time users can quickly get results.

# *"More Control with Less Effort."*
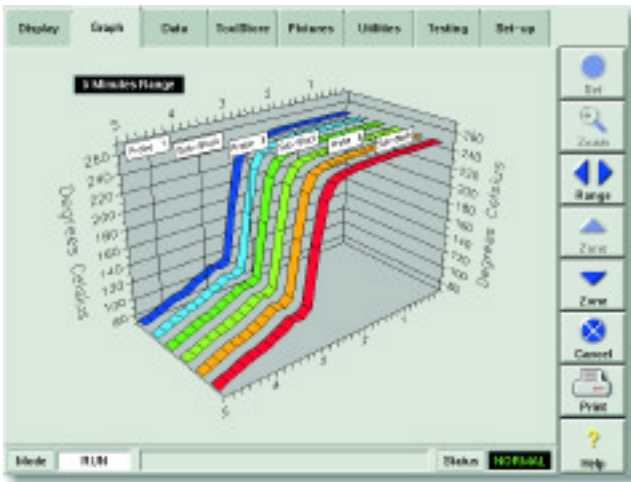
Touch and Rotate Graphs

One of the most remarkable features of the HRC-TSA software is the 3D graph page. It shows an auto ranging tape graph to represent up to six control zones in 3D with perspective. Even more, you can touch and smoothly rotate the graph, multi-axis, in real time. This allows you to get a better view and understanding of the temperature changes inside the tool. The graph is constantly updated with the latest readings while you view. Data plots are flagged with the zone identifier or alias name. Control buttons allow you to increment the displayed zone numbers and change the graph time base.
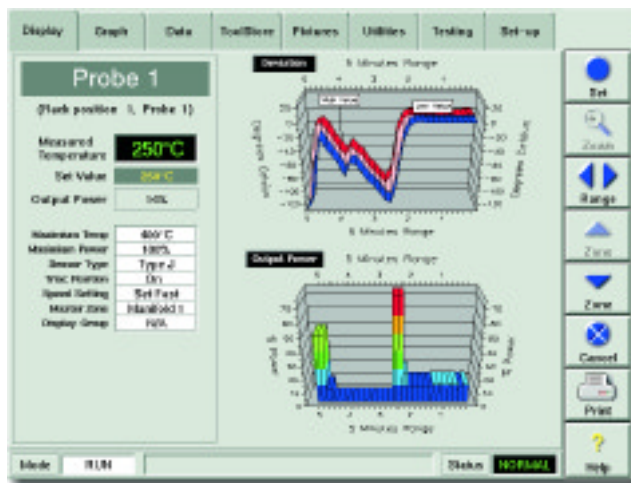
Zoom in for more detail

The Zoom button displays a more detailed view of any user-selected control zone. The zoomed-in view contains two additional 3D perspective graphs which can also be smoothly rotated for a better view. The deviation graph shows the minimum and maximum deviation from setpoint during a sample period. Like the main graph, the program auto scales the data to fit the lowest and highest values, allowing an excellent view of both the startup curve and running control stability. The second graph monitors power output to the zone. Control buttons increment the displayed zone number and change the graph time base.
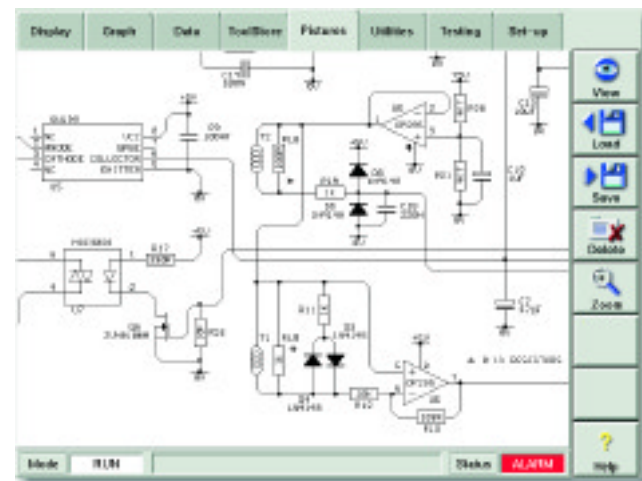
Store and view pictures

Another feature of the HRC-TSA system is the ability to store and view drawings and photos. Pictures are viewed through a window which can be smoothly panned around by touching and dragging with your finger. New pictures can be easily added via the floppy drive or over the network, if connected. This can give the operator immediate access to tool drawings, QA photos and information, electrical drawings, machine drawings, and other useful information. The zoom button allows you to see more detail. If you've ever searched for that elusive drawing while trying to solve a problem, you'll appreciate this feature.

"A Range of Control Cards to Suit Every Application."

The K Series design allows for a variety of configurations, using a selection of control card options. 6-zone 5A cards, designed for probe zones, offer the most in terms of reduced cabinet size and cost, typically reducing the cabinet volume to less than a third that of earlier models. Higher current output cards are fitted for manifold zones. Molders who prefer to have the flexibility of high current on all zones can choose to fit the 3-zone 15A, 2-zone 20A, or 2-zone 30A cards throughout.

     Whichever card you choose, the use of modern surface mount electronics makes them considerably more compact than conventional designs. The powerful CPU on each card enbles the controller to switch between Time Proportioned or Phase Angle-Fired modes when required, giving greater heater protection during startup bake-out and superior control of small, sensitive probes.
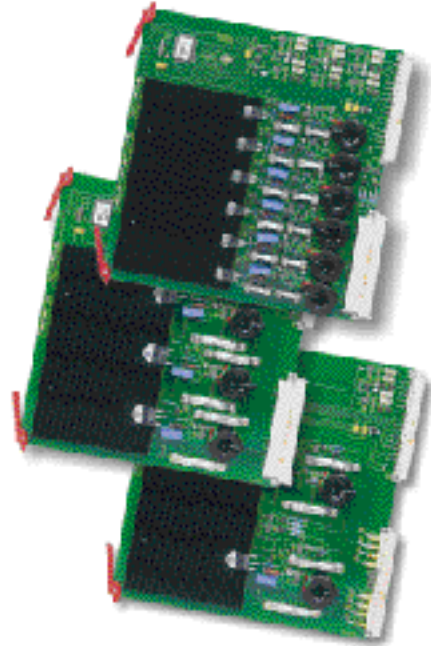
Control Cards

6x5Astandard	.HRC-6MOD
6x5Acurrent measuring	.HRC-6MODC
3x15Astandard	.HRC-3MOD
3x15Acurrent measuring	.HRC-3MODC
2x20Astandard	.HRC-2MOD
2x20Acurrent measuring	.HRC-2MODC
2x30Astandard	.HRC-1MOD*
2x30Acurrent measuring	.HRC-1MODC

*available early 2003

Cabinets

K10 Series, up to 10 slots	.HRC-K10-XX
K20 Series, up to 20 slots	.HRC-K20-XX
K30 Series, up to 30 slots	.HRC-K30-XX
K44 Series, up to 44 slots	.HRC-K40-XX

XX=number of slots

Consoles

Color Touch Screen	.HRC-TSA
Monochrome LCD	.HRC-KLCD

(mono available for the K10 only)

Cabinet Specifications

Cabinet dimensions (mm)

K10	.390W x 265D x 600H
K20	.450W x 400D x 800H
K30	.450W x 400D x 1017
K44	.450W x 400D x 1370H

Overall size, including feet and castors (mm)

K10	.490W x 410D x 860H
K20	.580W x 525D x 970H
K30	.580W x 525D x 1017
K44	.580W x 525D x 1540H

Forced cooling	.by multiple axial fans
Door interlock	.Isolator with tagout
Residual current circuit breaker .	.300 mA
Current circuit breaker	.rated to suit
Cabinet enclosure sealed to . . .	.NEMA3X (IP54)
Castors	.Heavy duty, 80 mm, 2 with locks

Conforms to current CE requirements

TSA Console Specifications

Processor	Celeron 800 MHz (minimum)
Motherboard bus	.1 - PCI, 1 - ISA
Memory	.128 Mb
Hard disk	.10 Gb (minimum)
Floppy drive	.1.44 Mb
Display	.10.4" color TFTLCD
Resolution	.SVGA, 800x600
Touch panel	.Resistive
Supply	.85-264 Vac, 47-63 Hz
Consumption	.80 W max
Serial Ports	.RS232 (4)
Parallel Port	.Centronic

Universal Serial Bus Connections (2)

Ethernet	.100/10 Base-T, RJ45
Sound	.16-bit stereo
Dimensions mm	.375W x 286H x 94D
Weight	.5.2 Kg (11.5 lb)

Conforms to current CE requirements