CORTRON
RUGGED H M I

Model 121 Rugged Keyboard

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    - • *Options*

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Product Summary: Full Featured Rugged Keyboard

The Cortron Model 121 series Rugged Keyboard with Pointing Device offers the ultimate in quality, reliability, conformity, and flexibility in a full size keyboard. Ideal for mobile, naval or airborne applications, the keyboard fits easily into standard RETMA rack systems. Available with many options, the Model 121 keyboard can be adapted to meet specific design requirements. The product is virtually impervious to contaminants found in the harshest applications, both in and out of shelters. Vital electronics and switch bearing surfaces are sealed for long term survival and protection against water, beverages, sand, dust, dirt, and many chemicals. Units can be cleaned in the sink with soap and hot water. The Model 121 is designed and manufactured for reliable trouble free operation in life dependent application typical of shipboard, airborne, ground mobile, and severe industrial applications.

The Model 121 key layout and design, like all Cortron keyboards, is designed to reduce the stress and strain on end users. The layout is based upon a standard 101 style keyboard, with the number pad and additional function keys shifted for standard 19" RETMA rack system installation. High contrast non-backlit and negative image (white on dark) keys with backlighting options provide high visibility in nearly all applications. The sculptured, full travel key switches have been ergonomically positioned for optimal typing and high speed data entry.

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Model 121 Rugged Keyboard
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Product Features

Cortron products are designed with the user in mind. You get rugged, sealed products that can be used every day. Ruggedization is not just an 'afterthought' – it's built in from the ground up. Install it today and depend on it for years. Rugged grade products typically include a limited *LIFETIME* warranty.

Model 121 Keyboards feature (either standard or via selectable options):

Backlighting
Negative image legends (legends glow) and key brightness control
Backlighting colors: green, red, yellow, white, blue, NVIS Green A or B
Low power backlighting, no extra power needed, plug compatible to typical host ports

Keys, Key Caps and Legends
Cortron ForEver keys / legends are chemically and abrasion resistant
Key legends: Standard USA layout or per customer request
Custom keycap legends and Multi color keys available
High speed data entry, N-Key rollover (easy to type ergonomic keys)
Full-Travel, solid state switches with electronically controlled debounce

Interfaces
USB, USB (SUN), PS2 & other interfaces upon request

Enclosures
Durable metal enclosure with scratch resistant finish
Panel mount, rack mount and custom modifications available upon request
Enclosure Colors: Standard are black, Navy gray, Army green, and off-white;
Custom colors are available upon request

Cables (Optional)
Connectors: USB (Type A single or pair), Pair PS2 6 pin Mini DINs, or per customer request

Pointing Devices (optional)
Options include none, 1 3/8" or 2" Trackballs, touchpad, DuraPuck, Button Mouse and others

Environmental Protections & Performance
Sealed rain proof, spill proof/sand and dust proof (IP65 and MIL-STD-810) construction
EMI/RFI/ESD/EMP shielded and protected for critical applications
Optional Extreme High Shock Protection (+100gs): Includes shock sensing (Stop Codes) and keycap clips as well as other options

Available rack kits – See AV101605-XX
Slide kits compatible to 19" RETMA racks (17.75" opening) per MIL-STD-189 and EIA RS-310
High quality ball bearing slides with Lock-in / Lock-out / Quick Disconnect features
1 3/8" Trackball version will fit 1U slot (1.75"), 2" Trackball requires 2U slot (3.5" or less)
18" and 22" slide lengths standard, custom lengths available
Separate or integral padded wrist rests painted to match keyboard color available.
Various mounting brackets and extension brackets.
Six degree angled keyboard mounting flange (2U) available for improved ergonomics

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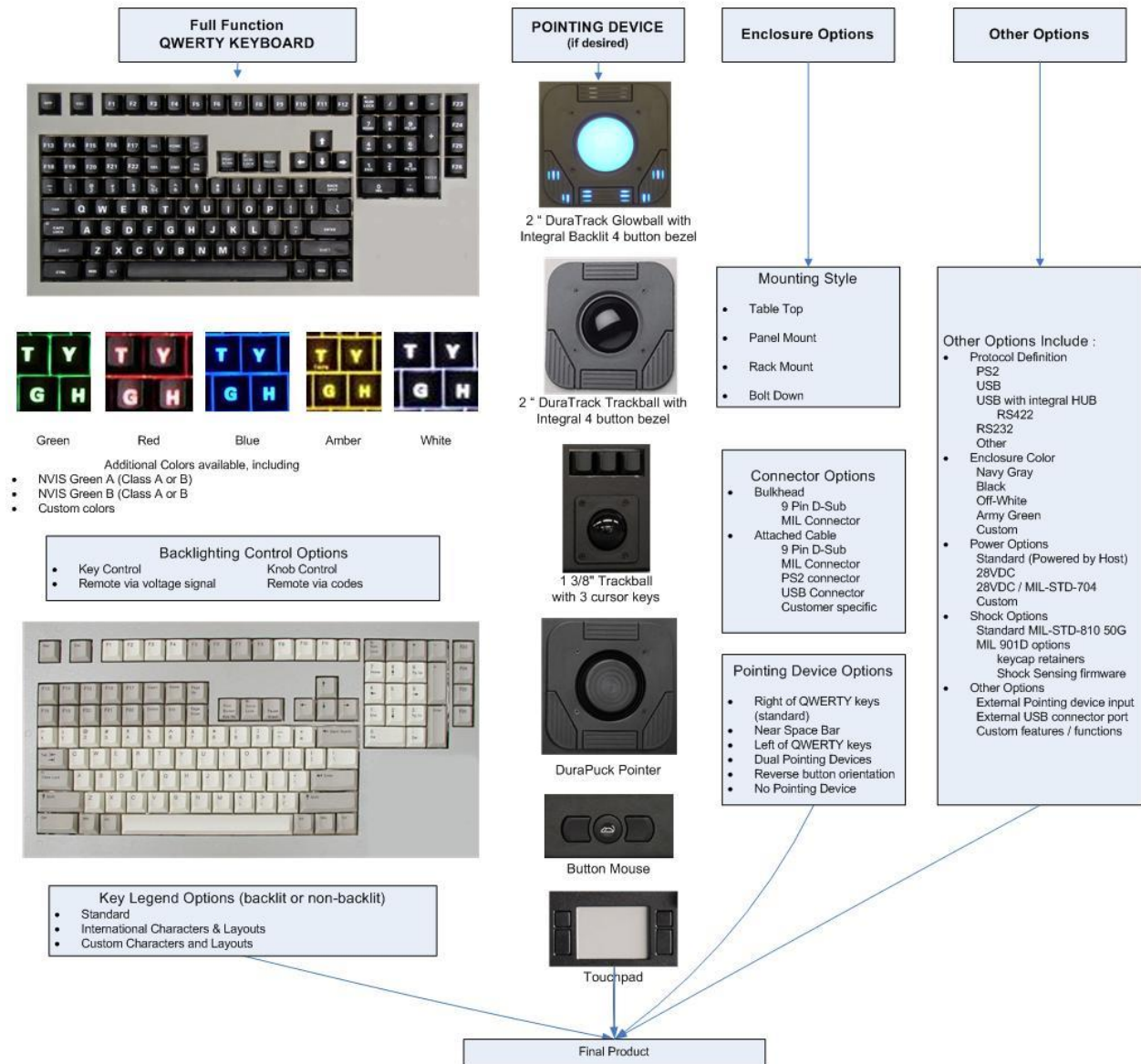
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Product Options

MODEL 121 KEYBOARD SELECTION OPTIONS

Full Function QWERTY KEYBOARD

Green	Red	Blue	Amber	White

Additional Colors available, including
- NVIS Green A (Class A or B)
- NVIS Green B (Class A or B)
- Custom colors

Backlighting Control Options
- Key Control
- Remote via voltage signal
- Knob Control
- Remote via codes

Key Legend Options (backlit or non-backlit)
- Standard
- International Characters & Layouts
- Custom Characters and Layouts

POINTING DEVICE (if desired)

2 " DuraTrack Glowball with Integral Backlit 4 button bezel

2 " DuraTrack Trackball with Integral 4 button bezel

1 3/8" Trackball with 3 cursor keys

DuraPuck Pointer

Button Mouse

Touchpad

Enclosure Options

Mounting Style
- Table Top
- Panel Mount
- Rack Mount
- Bolt Down

Connector Options
- Bulkhead
  - 9 Pin D-Sub
  - MIL Connector
- Attached Cable
  - 9 Pin D-Sub
  - MIL Connector
  - PS2 connector
  - USB Connector
  - Customer specific

Pointing Device Options
- Right of QWERTY keys (standard)
- Near Space Bar
- Left of QWERTY keys
- Dual Pointing Devices
- Reverse button orientation
- No Pointing Device

Other Options

Other Options Include :
- Protocol Definition
  - PS2
  - USB
  - USB with integral HUB
  - RS422
  - RS232
  - Other
- Enclosure Color
  - Navy Gray
  - Black
  - Off-White
  - Army Green
  - Custom
- Power Options
  - Standard (Powered by Host)
  - 28VDC
  - 28VDC / MIL-STD-704
  - Custom
- Shock Options
  - Standard MIL-STD-810 50G
  - MIL 901D options
    - keycap retainers
    - Shock Sensing firmware
- Other Options
  - External Pointing device input
  - External USB connector port
  - Custom features / functions

Final Product

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Product Options

Various Keyboard options and configurations include, but are not limited to the following production examples. We've manufactured over 500 different Model 121 configurations, so chances are we already have a product that meets your needs.

Rack Mount, 1 3/8" Trackball, Panel Mount,
non-backlit with wrist rest, bulkhead d-sub

Table Top, 1 3/8 trackball,
non-backlit, bulkhead d-sub

Panel Mount, touch pad,
non-backlit, Bulkhead s-sub

Table Top, 1 3/8" trackball,
green backlit keys and ball, bulkhead d-sub

Table Top, 2" Duratrack trackball,
blue backlit keys and ball, bulkhead d-sub

Rack mount, 2" Duratrack trackball,
red backlit keys and ball, custom attached cable

Table Top, DuraPuck, green backlit keys,
dual bulkhead MIL connector

Panel Mount, 2" Duratrack trackball w/ 6 button bezel,
red backlit keys and ball, bulkhead d-sub

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Rugged Grade Keyboard Specifications

Cortron Rugged Keyboard Products have been designed and manufactured to meet the following commercial and military environmental specifications. Optional specifications are only installed upon request by customer.

Size: Varies depending on options selected, see Cortron detailed mechanical drawing prefixed with EMK.

Weight: Varies depending on installed options

MTBF: Keyboard:
200,000-300,000 hours, typical, 25°C Ground Benign, MIL-HDBK-217, depending on installed options, see TM-389 for additional information.

MTBF: Trackball:
100,000-200,000 hours, typical, 25°C Ground Benign, MIL-HDBK-217, depending on installed options, see TM-336 for additional information.

Ergonomics: MIL-STD-1472, MOPP IV

Switches, Keyboards: Full-Travel, 100 million cycles

Switches, Pointing Devices: 5 to 100 million cycles, dependent on device and installed options

Switch Spacing: 0.75" OC (on center), typical

Power, Input: Logic +5VDC @ 250mA or less depending on installed options

Power, Input, Low Power Backlighting (Optional): Unless specified by customer, combined keyboard logic and backlighting not to exceed + 5VDC @ 450mA Max., powered from keyboard and/or trackball ports. Max current can be tailored per customer specification.

Power, Input (Optional): +24 to +28VDC, MIL-STD-704

Temperature:
Operating: -20°C to +70°C Non-operating: -40°C to +70°C

Temperature, Extended (Optional):
Operating: -40°C to +71°C Non-operating: -55°C to +85°C

Thermal Shock (Optional): Operating: -40°C to +71°C, Non-operating: -55°C to +85°C; transition less than 1 minute

Humidity: 0-95% RH, non-condensing

Humidity (Optional): 0-100% RH, condensing

Humidity / Corrosion, Operational (Optional): IEC60945: 4 cycles of 2hrs salt spray, 168hrs thermal soak +20-+40C.

Salt Fog (Optional): MIL-STD-810 (24, 48 or 96 hours)

Rain/Spill/Drip/Fire Sprinkler: MIL-STD-810/108 15º inclination or (Optional) 45º inclination

Water Jet Cleaning (Optional): 1500 PSI @ 20 inches

Sealing; Liquid/Dust Ingress Protection: NEMA 4 & IP65

Sealing; Liquid/Dust Ingress Protection (Optional): NEMA 6 & IP66, or IP67

Submersion (Optional): MIL-STD-810, 1m, Contact Cortron

Sand/Dust: MIL-STD-810

Shock: MIL-STD-810, +30g

Shock (Optional): MIL-STD-901D, Grade A Class I, Type A

Acceleration: MIL-STD-810 ranges 1.5-6.5g

Crash Safety: MIL-STD-810 ranges 4-16g

Vibration: MIL-STD-810, 20-2000Hz
+6db/Octave 20Hz -70Hz;
0.01G2/Hz 70Hz -700Hz
-6db/Octave 700-2,000Hz

Vibration (Optional): MIL-STD-810, 20-2000Hz
+6db/Octave 20Hz -70Hz;
$0.04G^2$/Hz 70Hz -700Hz
-6db/Octave 700-2,000Hz

EMI/RFI: Designed to meet MIL-STD-461, CE, IEC60945 and FCC regulations

Nuclear Survivability / Vulnerability (S/V):
Contact Cortron.

EMP / HEMP: Contact Cortron

ESD: EN61000-4-2, 6kV Contact Discharge, 8kV Air Discharge

ESD (Optional): DO-160, 18kV

TEMPEST (Optional): Contact Cortron; Level I or II, Red-Black

Altitude: +40,000 feet

Explosive Atmosphere: MIL-STD-810, Intrinsically Safe

Decompression:
MIL-STD-810 11psia to 3psia in greater than 15 seconds

Decompression, Rapid (Optional):
MIL-STD-810 11psia to 3psia in less than 4 seconds

Decompression, Explosive (Optional):
MIL-STD-810 11psia to 3psia in less than 0.5 seconds

Compass Safety (Optional): IEC60945

Solar Radiation: MIL-STD-810

Fluids (chemical) Resistance (Optional): MIL-STD-810

NBC Decontamination (Optional): Contact Cortron

Fungus (Optional): MIL-STD-810

Bench Handling: MIL-STD-810

Safety: MIL-HDBK-454, UL1950, CE, materials UL recognized/approved, File #E179526

Workmanship: MIL-STD-454, IPC-610, Class 2

Workmanship (Optional):
IPC-610 Class 3 or J-STD001 Class 2 or 3

NOTES:
1. Above specifications (Cortron TE10212601 Rev A3) subject to change without notice unless otherwise under written agreement.
2. Performance levels stated above are based on actual test results from many product tests using common Cortron standard design practices, components and modules.
3. Specifications noted above are assumed to be latest revisions. Cortron test data may be originated from older test specification revisions. Some tests performed by customers so Cortron may not have all test reports available.
4. Excessive spill, rain, salt fog or humidity, desire for product to survive for 10-20 years, or mitigate against RoHS tin whiskers may require optional conformal coating.
5. Performance levels may be dependent upon mounting configuration and options installed.
6. Optional performance levels must be requested by customer, standard Cortron products may not have extra performance capability installed, and may be configuration dependent.
7. All options and features may not be ready for immediate shipment depending on product version, contact Cortron for additional information.
8. Some options and features and combinations thereof may not meet all listed specifications without limitations or exceptions.
9. Unless specified otherwise, all products are compliant to DFARS 252.225-7014 Specialty Metals, Berry Amendment.
10. Prohibited materials: unless otherwise stated please assume Cortron products contain materials as listed on TM-334, available upon request. If customer requirement includes flow down of prohibited materials, please provide information for review by Cortron.
11. RoHS: Cortron is in process of migrating all standard product designs and materials to RoHS compliance. All plastics, standard enclosure case finishes, and standard electrical components used in Cortron products are RoHS compliant. As of 2014, unless specified otherwise, products may use lead based solder on electronic assemblies. Full RoHS compliant versions available upon request.

Please do not hesitate to contact Cortron for application assistance or if additional information is required.

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Rugged Specs
TE10212601 Rev A3