

OEM Designers Handbook For Industrial and Medical Controls

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Introduction:

The CTI Electronics OEM Line of Industrial, Medical and Marine Input Devices

CTI Electronics offers a complete line of NEMA 4 rated input devices for use in OEM designs using PC Compatible computer or imbedded control designs. These input devices are rugged enough to stand up to the rigors of the Industrial and Medical environments, and reliable enough to allow operators to count on an accurate and repeatable response each and every time the product is used.

If your project requires a "Port-Compatible"[™] Sealed Keyboard, the *Original* Industrial Mouse®, the low-profile ARROWMOUSE[™], or if you need a rugged sealed joystick or a trackball with an analog voltage or quadrature signal output, CTI Electronics Corporation has the OEM input device for your application.

This handbook contains overviews of the various products offered by CTI Electronics Corporation. If your application requires a configuration that is not listed within this handbook or if you need more details on our products, please speak with one of our Sales Engineers for assistance.

Your customer will use your product on a daily basis, and will judge your product on the basis of the functional performance of the User Interface Controls. At CTI, we want to provide the best operator interface devices available.

CTI takes pride in the quality of our engineering design, the materials we use and our manufacturing methods. The sum total is the best operator input device available for you application.

Organized by product type, this handbook lists all of the most popular configurations of Industrial, Medical and Marine input devices. All of the products listed are off the shelf designs, and many are stocked items. All items are designed and manufactured in the USA.

To save you download time, the Technical Drawings for all our products are not included with this handbook. We have listed the Document Number for each product, and these drawings are available for individual download from our website at www.ctielectronics.com/applicationsdrawings.

If your design calls for a modified version of any of the products listed, please call our Sales Engineers with you specific requirements. Because we design and manufacture all of the products in this manual, we can easily make simple modifications to a standard product to make it perfect for your application.

OEM Line Sealed Keyboards - NEMA 4

Overview:

CTI Electronics Corporation offers a complete line of NEMA 4 Sealed Keyboards for the OEM Designer of Industrial, Medical and Marine products. Ranging from the full size KI9800 Series to the KI6800 Series, there is a NEMA Sealed Keyboard for every application.

Each CTI Electronics OEM Sealed Keyboard has full 101/104 key functionality, and is port compatible with your PC based control system. All this functionality is provided without the need for software drivers.

DXF Files for all OEM products are available to simplify your engineering design tasks.

All CTI Electronics Sealed Industrial / Medical OEM Keyboards have the following features:

- Individual full size Keys with Hard Gold plated contacts rated at 10MM operations.
- NEMA 4 Rating.
- Port Compatibility with any PC. (No software drivers required)
- Molded in sealing gasket.
- Gold Plated header for output cable.
- Full 101 / 104 key functionality.
- Custom key legends and Semi-Custom firmware in OEM quantities.
- Panel Thickness up to #16 gauge (.050 to .060 inches).
- Can be designed into any workstation, either horizontally or vertically.

Model Number KI9800 Series

The Model Number KI9800 Series is a full size Industrial / Medical Keyboard with a separate numerical keypad arranged much like the standard desktop keyboard found in many office environments. This keyboard measures 15.50" x 7.25", and has the following unique features:

F13-F24 Keys: The Model Number KI9800 Series include the *F13-F24 Keys*, that can provide the extra functionality often required in OEM Control Applications. The F13 through F24 keys are factory programmed to transmit an "*SHIFT F_n*" string when pressed (See F13 – F24 String Table Below). If your OEM application requires, the F13 through F24 keys may be factory programmed to transmit a custom string.

Standard Factory Programmed Strings for F13- F24 Keys

Key	String Transmitted	Key	String Transmitted
F13	"SHIFT-F1"	F19	"SHIFT-F7"
F14	"SHIFT-F2"	F20	"SHIFT-F8"
F15	"SHIFT-F3"	F21	"SHIFT-F9"
F16	"SHIFT-F4"	F22	"SHIFT-F10"
F17	"SHIFT-F5"	F23	"SHIFT-F11"
F18	"SHIFT-F6"	F24	"SHIFT-F12"

The innovative ARROWMOUSE™ (Patent Pending) pointing device is also available with the KIA9800 Series. The ARROWMOUSE® is drift free, is rated for 10MM operations, and adds no size to the overall dimensions of the standard unit. This is ideal for the addition of a reliable sealed pointing device to any open frame or PC design. An added benefit is that the ARROWMOUSE allows the Windows® or NT® system to boot up properly, removing the added expense of adding extra “mouse substitute” hardware to your design to satisfy system boot or carrying a portable mouse for your system setup or service requirements.

The KIA9800 with ARROWMOUSE feature has an identical footprint to the Model Number KI9800 keyboard. This simple yet innovative feature allows easy change in your OEM product design from keyboard to keyboard/ mouse with a single mechanical design.

Model Number KI8800 Series

The KI8800 Series Industrial and Medical Keyboard includes all of the operational features of the KI9800 Series keyboards, but deletes the separate Numeric Keypad and the F13 through F24 keys. The result is a sealed keyboard with an overall length of 73” and Full 101/104 key functionality.

Model Number KI6800 Series:

The Model Number KI6800 Series provides full 101/104 key functionality in a sealed OEM Keyboard with a foot print of only 8” X 5”.

Each of the keys are full sized and are identical to the keys on the larger KI9800 and KI8800 Series keyboards, but through efficient use of key spacing and layout, full Windows® functionality is retained in a much smaller overall footprint.

The innovative ARROWMOUSE™ (Patent Pending) pointing device is also available with the KIA6800 Series. The ARROWMOUSE™ is drift free, is rated for 10MM operations, and adds no size to the overall dimensions of the standard unit. This is ideal for the addition of a reliable sealed pointing device to any open frame or PC design. An added benefit is that the ARROWMOUSE allows the Windows® or NT® system to boot up properly, removing the added expense of adding extra “mouse substitute” hardware to your design to satisfy system boot or carrying a portable mouse for your system setup or service requirements.

The KIA6800 with ARROWMOUSE™ feature has an identical footprint to the Model Number KI6800 keyboard. This simple yet innovative feature allows easy change in your OEM product design from keyboard to keyboard/ mouse with a single mechanical design.

The KI6800 Miniature Keyboard is available with either red or green back lighting. The KI6800-BX Series has high efficiency LEDs with 10 intensity levels that are keyboard controlled and powered from the PS/2 port.

Custom Sealed Keyboards

Any of the standard Industrial and Medical Keyboard configurations and functions can be combined to provide a Custom Sealed Keyboard Solution for any OEM Design.

Some of the typical keyboard attributes that may be included in an OEM design are:

- Custom Key Codes
- Locking out of specific keys to limit user access
- Custom Key Legends
- Special Key Coating for NBC (Nuclear, Biological, Chemical) resistance
- Proprietary Software
- Keyboard Color

Please call CTI Electronics with your Custom Keyboard requirements.

Industrial and Medical Keyboards – NEMA 4 (OEM LINE)

Ordering Information

Model Number	Description	CTI Drawing Number
	Full Size Sealed Keyboard	
KI9800	Sealed Keyboard – 116 Key	820035
KI98P0	Sealed Keyboard with soldered PS/2 cable - 116 Key	820035
KI98T0	Sealed Keyboard with soldered AT cable - 116 Key	820035
	Compact Sealed Keyboard	
KI8800	Sealed Keyboard - 87 Key – OEM	820037
KI88P0	Sealed Keyboard with soldered PS/2 cable - 87 Key	820037
KI88T0	Sealed Keyboard with soldered AT cable - 87 Key	820037
	Miniature Sealed Keyboard	
KI6800	Sealed Keyboard – 68 Key	820016
KI68P0	Sealed Keyboard with soldered PS/2 cable - 68 Key	820016
KI68T0	Sealed Keyboard with soldered AT cable - 68 Key	820016
	Miniature Sealed Keyboard with ARROWMOUSE™	
KIA9800	Sealed Keyboard with ARROWMOUSE™ - 116 Key	820022
KIA98P0	Sealed Keyboard with ARROWMOUSE™ with soldered PS/2 cable – 116 Key	820022
KIA6800	Sealed Keyboard with ARROWMOUSE™ - 68 Key	820018
KIA68P0	Sealed Keyboard with ARROWMOUSE™ with soldered PS/2 cable - 68 Key	820018
	Interconnecting Cables*	
P6S004-6.0	4 Pin Header to PS/2 – 6 feet	820027
P6S004-9.5	4 Pin Header to PS/2 – 9.5 feet	820027
P6S006A-6.0	4 Pin Header (keyboard and mouse) to PS/2 – 6 feet	820028
P6S006A-6.0	4 Pin Header (keyboard and mouse) to PS/2 – 9.5 feet	820028

* CTI recommends the use of soldered on cables for your OEM Sealed Keyboard. Soldered on cables can be sized to meet your OEM requirements. The separate Interconnecting Cables are offered to simplify your prototyping and testing processes.

Industrial Mouse – NEMA 4

The Original Industrial Mouse® was conceived, designed and is still manufactured only by CTI Electronics. Based on the CTI Analog Inductive Joystick, the Industrial Mouse added Port-Compatibility™ to the joystick to provide unequalled mouse port control for all applications.

Zero drift, repeatable output, and the ability to make minor cursor adjustments down to one pixel at a time make the CTI Industrial Mouse the best choice for operator interface for most designs.

Features of all CTI Electronics Industrial Mouse products:

- No moving electrical parts or magnets
- Sealed to NEMA 4
- Solid stainless steel shaft in nylon ball moves within molded delrin housing
- 8 speed curves
- 1 year warranty from the factory
- Port Compatible - needs no software drivers

Available Mouse Protocols:

Any of the following mouse protocols may be provided with the CTI Electronics Industrial Mouse.

- PS/2 (Windows and NT Compatible)
- ABD (Apple)
- DEC (Digital Equipment)
- HPIL (Hewlett Packard)
- Sun Microsystems
- USB (Scheduled availability in the year 2000)

Handle Styles Available

A Number of handle styles are available for the CTI Industrial Mouse. These handle style are depicted below. The industry exclusive “N3” knob provides a secondary means of actuating the left mouse button, and allows for one-handed point and click operation.

Package Styles Available:

Workstation or Desk Top and Hand Held Varieties:

In Stainless Steel enclosure, the Workstation, Desktop and Hand Held Industrial Mouse can be supplied with company logo.

An anodized aluminum Mouse Holder is available for the storage of the Hand Held Industrial Mouse.

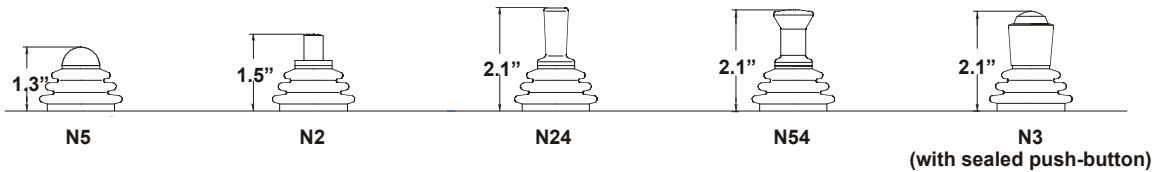
Panel Mount and OEM Varieties:

Panel Mount and OEM varieties of the Industrial Mouse are designed for use in custom or OEM Control Panels with a thickness up to #16 gauge (.059 inches).

Industrial Mouse® – NEMA 4

Ordering Information

Model Number	Description	CTI Drawing Number
Panel Mount Varieties		
H20P9-NX-2(3)B	Panel Mount Industrial Mouse®	820043
OEM Varieties		
F80P9-Nx-2(3)B	OEM Industrial Mouse®	820044
F90P9-Nx-2(3)B	OEM Industrial Mouse®	820045
Hand Held Varieties		
M20P9-Nx-2(3)B	Panel Mount Industrial Mouse®	820046
Workstation or Desktop Varieties		
M90P9-Nx-2(3)B	Panel Mount Industrial Mouse®	820047
Please select any one of the Industrial Mouse handle types, and substitute that number in place of "x".		



Handle Options for the CTI Electronics Industrial Mouse®

Trackball – NEMA 12

The Trackball is one of the first operator input devices used in many types of Industrial, Medical and Aerospace applications. For many applications, the Trackball is still the input device of choice.

The Trackball is a very intuitive means of cursor control that allows the operator response in speed in direction that is directly proportional to the input.

CTI manufactures a complete line of rugged trackball products, from 1.3” dia to 4” dia, and with outputs that range from pulse and direction to quadrature to full mouse port compatibility. Rated NEMA 12, the CTI Electronics Rugged Trackball is the best choice when functionality and reliability are project requirements.

The Rugged CTI Electronics Trackballs provide a number of features that differentiate themselves from commercial products. Specifically:

- All Trackballs are sealed with a molded Teflon ring.
- All Trackballs are round to within .002”
- All trackballs have redundant phototransistors to reduce the effects of LED aging.
- Micro-Etched encoders.
- All Trackballs roll on solid stainless steels shafts which are supported by ABEC Grade 7 (aircraft quality) bearings.

More technical information on the CTI Trackballs is available on our website at www.ctielectronics.com. Download Document 811543 “Trackball Specifications Test and MTBF Data”

Trackball – NEMA 12

Model Number	Description	CTI Drawing Number
T1 Series	2.0" Trackball	
T2 Series	2.25" Trackball	
T3 Series	2.50" Trackball	
T4 Series	3.0" Trackball	
T5 Series	3.5" Trackball	
T6 Series	1.3" Trackball	
T7 Series	1.5" Trackball	
T8 Series	2.0" Trackball	
	All of the above Rugged Trackball products are available with the following output protocols:	
	Encoder Output	
	RS-232 Serial	
	LS-TTL Serial	
	Programmed Pulses (TTL)	
	Pulse and Direction	
	Quadrature	
	All Popular Mouse Protocols	

Handling Precautions for Static Sensitive Devices:

All CTI Electronics OEM Products contain static sensitive devices. Use appropriate static precautions when handling and installing these products into OEM assemblies.

NEMA 4 Installations:

All CTI Electronics OEM Products listed in this handbook (with the exception of trackball products) are NEMA 4 rated when installed properly into a NEMA 4 rated sealed OEM Control Panel Assembly.

The circuitry side of the product is of open frame construction, and has no NEMA rating.

If the OEM Control Panel Assembly is not NEMA 4 sealed, then the proper operation of the CTI Electronics OEM Products is not guaranteed, and the factory warranty is voided. For those applications where the OEM Control Panel Assembly cannot be sealed, CTI Electronics offers product in fully sealed enclosures.

Please contact CTI Electronics for details on the applications of all our Industrial/Medical products.

How to contact CTI Electronics:

CTI Electronics Corporation designs and builds the best operator input devices available on the market today. We are proud of our quality, and our customer support.

All our Technical Support, Warranty Support and Customer Service support originates from our Engineering, Sales and Manufacturing facility in Stratford, CT.

CTI Electronics Corporation is located at:

110 Old South Avenue
Stratford, Connecticut 06615
(203) 386-9779 Telephone
(203) 378-4986 Fax

Visit us on the web at www.ctielectronics.com

E-mail us at sales@ctielectronics.com

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Industrial Mouse® is a Registered Trademark of CTI Electronics Corp.
Teflon is a Registered Trademark of DuPont
Window is a Registered Trademark of Microsoft
ARROWMOUSE™ is Patent Pending.
The KI6000 Series Miniature Keyboard are Patent Pending.

CTI Electronics Corporation makes no claim on the suitability of any of the products detailed herein for use. The buyer must determine whether any CTI Electronics products are suitable to their particular application.