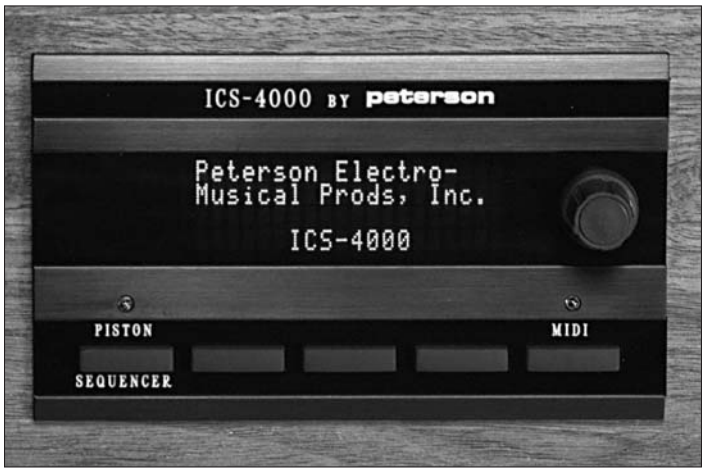
ICS-4000™ Integrated Control System

For all of a pipe organ's switching, combination action, and MIDI control requirements



- Extraordinary compliment of switching, MIDI, & C/A related features.
- Hardware and software provided fully configured to organ builder specs.
- Configuration changes easily made on site.
- Factory support via the Internet- no custom chips to wait for.
- Intuitive, consistent control panel menus with full sentence instructions.
- Exclusive "Organist Folder™" organization of memory level settings.
- Simple record/playback to internal memory; no disks or other media required.
- Optionally save song files & combination action registrations to floppy disks.
- Unprecedented Piston Sequencer use and editing features.
- Extremely fast and error-free data handling via Ethernet protocol.

The Peterson ICS-4000™ combines an unprecedented number of available coupling, unification, combination action, and MIDI functions into a single software-driven system that may be customized for virtually any pipe organ application. Never before has such a powerful yet easy-to-use control system been available to pipe organ builders and rebuilders.

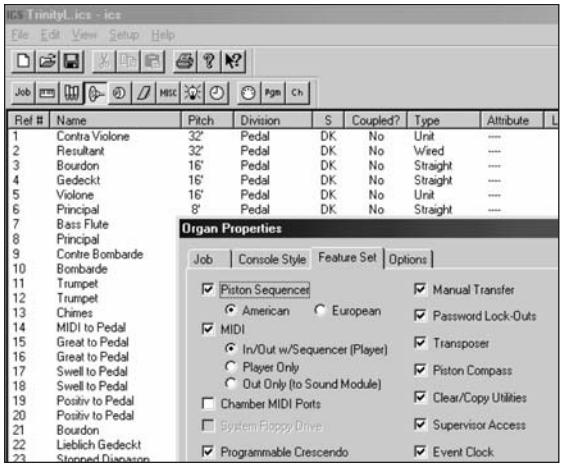
Several important advantages set the ICS-4000 apart from other software-based pipe organ controllers. While typically supplied pre-configured to your specification from the factory, Peterson's innovative system can be altered on-site to meet changing requirements. This is usually accomplished by loading a new software file, which may be sent to the organ shop or church via the Internet, using the available ICS-4000 Floppy Disk Drive. Advanced users may enter their own specification changes with the custom Windows® program developed by Peterson for the ICS-4000. It is also possible for diagnostic procedures and updates of the operating system software to be handled over the "net" if desired.

Inevitably, making additions often requires wiring in more inputs and outputs, such as stop controls and new note actions. With the Peterson ICS-4000, new connections may be made to any unused junction pins on an input or output board, as appropriate. All connections can then be neatly labeled for their function by printing out a wiring list that is automatically generated by the ICS-4000.

Those familiar with the modular circuit design philosophy pioneered by Peterson decades ago will find this same concept carried forward into the ICS-4000. Limited function circuit board modules are designed to plug into high-density connectors inside metal cages. A single "Main CPU" cage, mounted in the console, contains the circuitry related to the system's main microprocessor and serves as a connection point for various components.

"Satellite" cages contain one Microcontroller board and any combination of three other types of circuit boards called Input boards, Output boards, and Stop Action Controller boards. All input and output pins are compatible with Peterson's E-Z Wire™ Connectors, Output Connector boards, and new Quick Punch™ unpluggable punch-down connector boards. Satellite cages in the quantities required are provided for the console and the chamber(s). Connections between Satellite cages and "hubs" are made via very small and commonly available "Cat 5" cables. In most applications a single "Cat 5" cable carries all data between the console and chamber hubs. When separate organ rectifiers are utilized for the console and chambers, no voltage-referencing feed or return conductors are needed.

The Peterson ICS-4000 processes an organist's every command with remarkable speed and reliability. State-of-the-art microcontroller circuits gather and organize information about groups of stop, key, expression, and miscellaneous inputs associated with each Satellite cage. This data is then sent to the main microprocessor in the Main CPU cage using a computer-industry-standard communication system called "Ethernet", which is utilized in millions of computer networks worldwide. The Ethernet communication protocol was developed to send massive amounts of data at high speeds over long distances, automatically ensuring that all the information

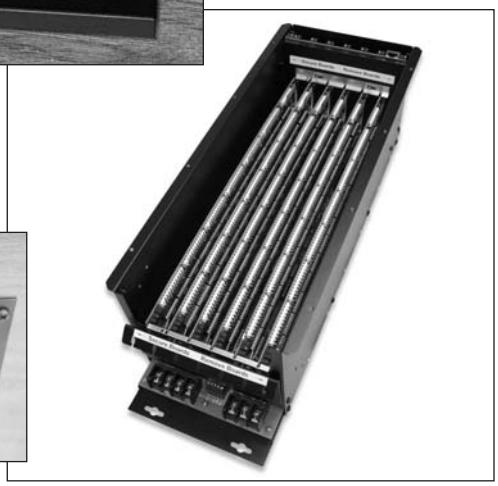


A custom Windows® program is used to edit the organ's configuration.

A typical screen is displayed on the attractive Control Display Unit (CDU).

Bar graphs are available for crescendo and expression.

MIDI cable connectors can be mounted in a convenient location.



"Satellite" cages may contain Input, Output and Stop Action Controller boards.

is received accurately. The embedded "real time" operating system in the ICS-4000's main microprocessor determines and prioritizes what must happen with all system outputs and the microcontrollers associated with output boards are "notified" so they can coordinate the activity of the output boards accordingly. This method of "distributed processing" using a master microprocessor and local microcontrollers contributes to the superb performance of the ICS-4000 for even the largest pipe organs.

All components used in the ICS-4000 are of the highest quality, selected to far exceed the demands of a pipe organ environment. Much attention has been given to selecting parts that are very widely used throughout the electronics industry to assure long-term availability. Numerous self-diagnostic features, an integral fault reporting system, self-resetting fuses, self-protecting driver chips, and provisions for limited Internet-based diagnostic procedures are included.

While nearly any imaginable feature may be accommodated by this product, organists will find the elegant "Control Display Unit" (CDU) with its four line, high visibility vacuum florescent display simple and intuitive to use. The status of all essential functions can be viewed at a glance from the main "run" screen while playing. Three dynamically labeled buttons and a rotary knob give direct, easy access to most functions. Two additional buttons are used for immediate enabling of MIDI and Piston Sequencer controls. The matching 3-1/2" floppy drive control panel may be installed in the console for downloading and uploading MIDI files; saving combination action, crescendo, tutti, and piston sequencer registrations; and making any desired software updates.

An intuitive menu, with instructions generally spelled out in complete sentences, guides an organist through all operations beyond those available on traditional organ controls. Step-by-step on-screen guidance is provided for such procedures as setting up a crescendo or tutti, programming and editing a piston sequence, and operating the optional built-in record/playback system. The ICS-4000's MIDI-based performance recording feature requires no external sequencer and no media such as floppy disks or memory cards, but allows saving files to floppy disks when desired.

Peterson's exclusive "Organist Folder™" format allows each organist to group their assigned memory levels and all other personal settings under the heading of their own name, then password-protect the entire folder against unauthorized resetting by others. Memory levels within each organist folder are numbered from #1. Piston registrations, piston sequences, and other settings can be easily copied to other levels or folders as well as saved to floppy disks.

With its remarkable performance, software-based versatility and almost limitless feature set, the ICS-4000 Integrated Control System may be just the right Peterson product for your next project. Please contact one of our customer service representatives to discuss your requirements.

We invite you to visit www.ICS4000.com for more information including a list of available features and an online demonstration of the ICS-4000's on-screen menus.

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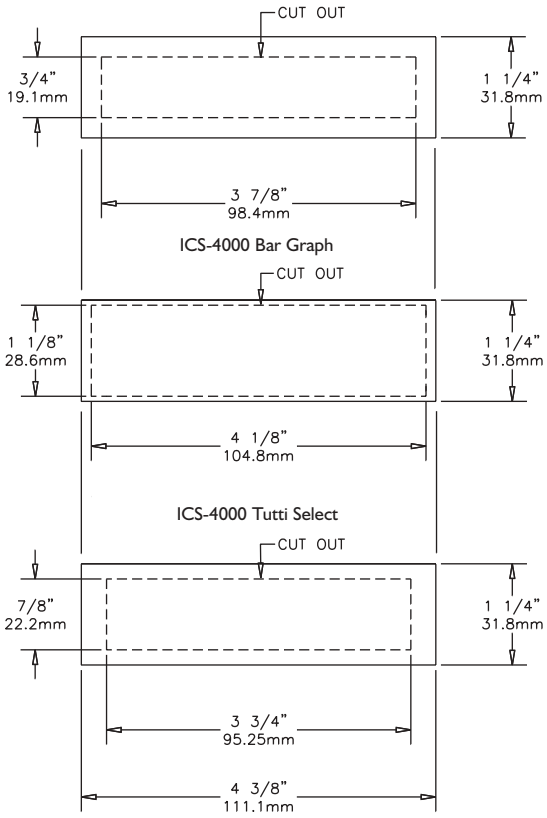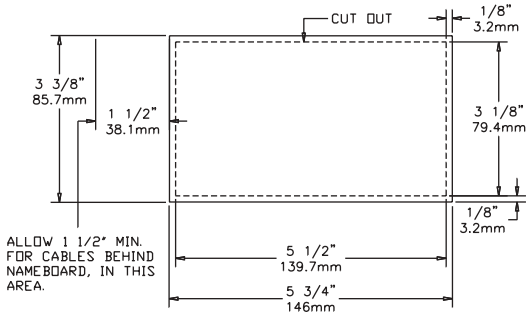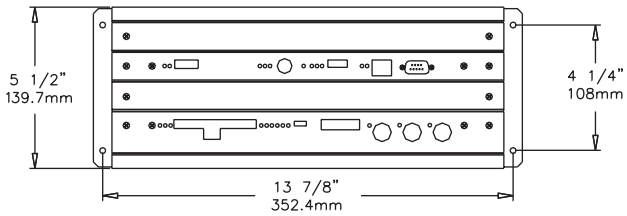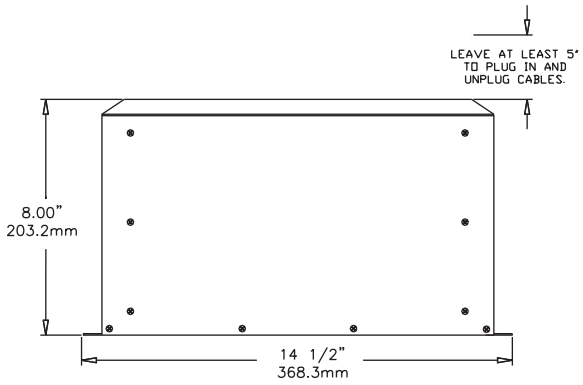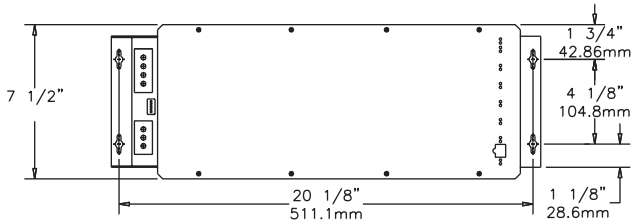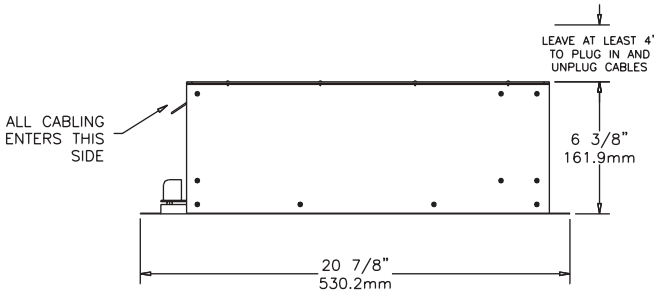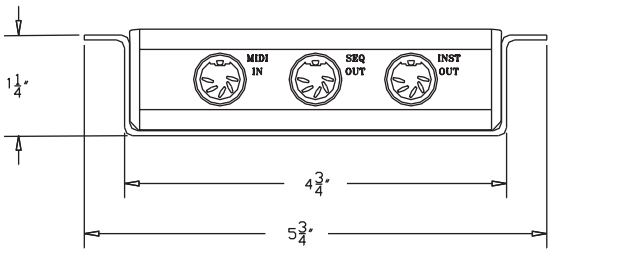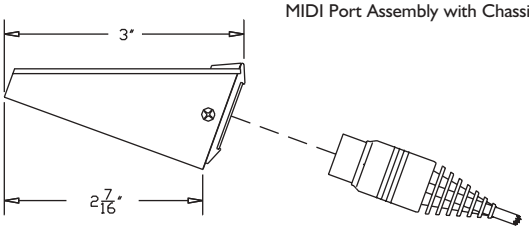
TECHNICAL INFORMATION