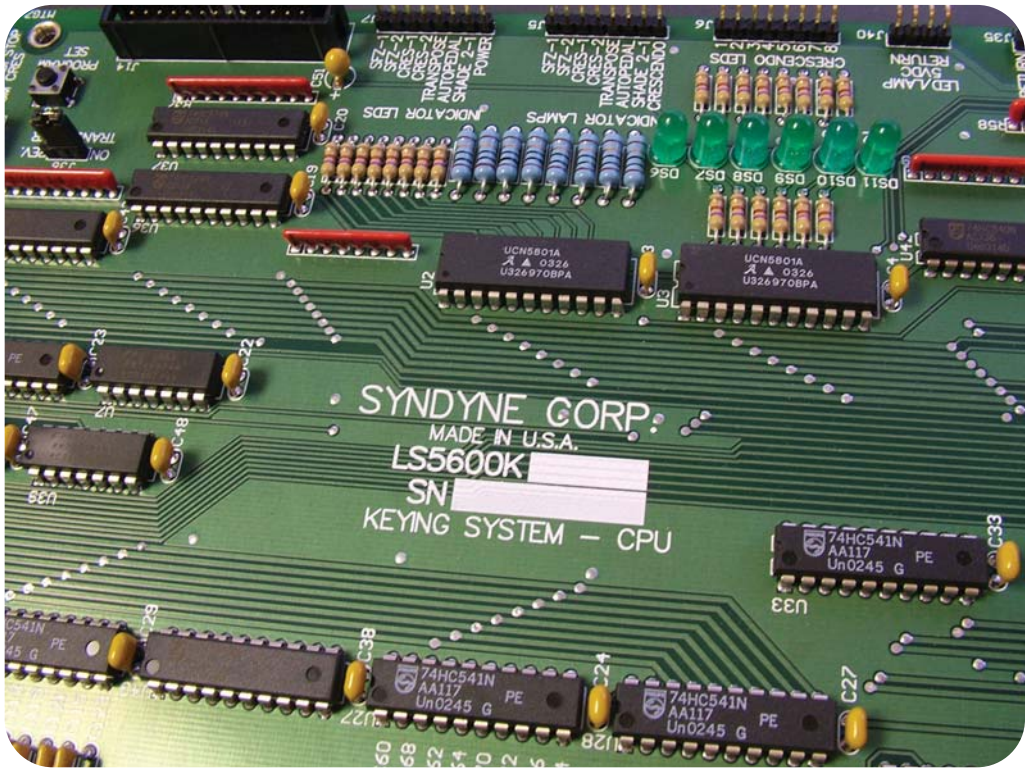
SYNDYNE CORPORATION

Syndyne Provides Quality Components & Systems For the Organ Industry

PARTS CATALOG



Your Success Is Our Business...

And We Take Our Business Seriously

MAILING ADDRESS:
(ALL CORRESPONDENCE)
PO BOX: 820543
VANCOUVER, WA 98682-0012

PHONE: (360) 256-8466
FAX: (360) 256-8208
EMAIL: syndyne@syndyne.com
WEBSITE: www.syndyne.com

SHIPPING ADDRESS:
(FOR DELIVERIES ONLY)
12109 NE 95TH STREET
VANCOUVER, WA 98682-2407

Terms and Conditions Of Sale

Agreement

Syndyne Corporation does not accept any agreements on customer orders which contradict, change, or expand upon the terms and conditions contained herein or included on an original Syndyne Invoice or Sales Order. No representations, stipulations, agreements, or understandings shall be valid unless Syndyne has issued and/or accepted them in writing.

Prices

All pricing offered by Syndyne in print and/or electronic formats including but not limited to e-mail, website, or online documents, is current only at the time of publication. Such publications should not be considered a binding quote or guaranteed price. All prices are subject to change without notice. The pricing in any new publication supersedes all previous pricing publications. A minimum order charge of $10.00 will be added to orders of less than $35.00.

Payment

All payments are to be in US Dollars. New customers shall begin with a payment status of 100% prepaid before shipment for all orders under $1000 and 50% paid at time of order with 50% paid before shipment for all orders $1000 or more. When prepaying with a check, the check must clear before shipment of goods. For certain customers an open account may be established with Syndyne Corporation. To establish an open account a credit application with satisfactory credit references must be filled out by the customer and approved by Syndyne Corporation. Open accounts shall have NET 30 DAYS terms from shipment of standard goods or the invoice date, whichever is earlier. Orders on open accounts containing custom goods shall require 50% paid at time of order with the remaining 50% to be paid under NET 30 DAYS terms. Open accounts that are past due may lose the right to place additional orders and are subject to an interest charge of 1-1/2% per month (18% APR) beginning from the date of invoice. Interest will accrue until payment is received. Customers with chronically late payments may have their NET 30 day status suspended or revoked. Checks returned for insufficient funds (NSF) will be charged at $40.00 each.

Cancellation or Modification of Order

When an order is cancelled, the customer will be responsible for all costs up to the time the order is cancelled. When an order is changed after Syndyne accepts it, additional fees may apply to cover costs incurred by Syndyne Corporation. When work has already begun on an order and the order is modified, the customer is responsible for any costs incurred by Syndyne Corporation in changing the order.

Lead Times

Standard lead times are given as an estimate and are not to be used in project planning. Actual lead times are provided at the time of ordering and are subject to factory capacity, volume of orders, and other factors. Syndyne is not to be held responsible for delays or inability to complete a project due to, but not limited to, strikes, accidents, terrorism, fires, floods, other acts of God, acts of war, or other causes and contingencies beyond the control of Syndyne Corporation.

Shipment

When no shipping instructions are provided by the customer, Syndyne Corporation will use its judgment as to the appropriate shipping address and best method of shipment. Syndyne primarily uses UPS Ground unless otherwise instructed by the customer. In the event the customer requests a method of shipment which requires special handling by Syndyne such as, but not limited to, off-site package drop off, additional fees may apply.

Transfer of Title

All equipment provided by Syndyne remains the sole property of Syndyne Corporation until payment is received in full. Syndyne reserves the right to demand return of said equipment to the factory at any time deemed necessary as long as the equipment has not been paid for in full. If such Syndyne equipment has been used in the building of an instrument, Syndyne acquires partial ownership of the instrument until Syndyne receives payment in full for the equipment provided by Syndyne.

Limited 10 Year Organ Parts Warranty

Syndyne warrants, to the original purchaser, the equipment that it manufactures for use in the organ industry to be free from material defects and defects of workmanship under normal use and service, for a period of TEN (10) years from the date the product was shipped to the customer or from the date of the original Syndyne Corporation invoice, whichever is earlier. Syndyne's sole obligation under this warranty shall be to, at its option, repair or replace any Syndyne products which have been deemed by Syndyne to contain material defects and/or defects of workmanship. Transportation charges for return of the products must be prepaid by the buyer. Syndyne has the sole right under this warranty agreement to inspect any product or part thereof, to determine whether or not the defect is covered by the terms of this warranty. Written notice of all claimed defect(s) must be given within thirty (30) days after such defect is first discovered.

This warranty does not cover parts which have been repaired by anyone other than Syndyne when such repairs are inconsistent with Syndyne's decided level of quality and/or workmanship. This warranty does not apply to products which have been used improperly, abused, altered, damaged, subjected to accident, flood, fire, acts of God, and/or used with components made by another company in a manner unauthorized by Syndyne. Products on which serial numbers or part numbers have been altered, defaced, removed, or tampered with, shall not be covered by this warranty. Syndyne will not be responsible for any charges from dismantling, reassembly, reinstallation, and/or travel time.

Products which are manufactured by another company and distributed by Syndyne are not covered by this warranty. Contact the manufacturer directly for issues regarding warranty of these products.

This warranty is in lieu of all other warranties expressed or implied, including, but not limited to, warranty for merchantability and fitness for a particular purpose as well as all other representations made to the purchaser. Syndyne does not authorize and will not be held responsible for warranties given by persons or companies outside of Syndyne Corporation except when such warranty is agreed to by Syndyne Corporation in writing. Syndyne will not be liable for any special, indirect, incidental, or consequential damages, including, but not limited to, damages claimed in connection with any rescission of this agreement by the buyer.

This warranty embodies the entire warranty agreement between Syndyne and the product's original purchaser. Syndyne's warranty, as described in this agreement, shall not be diminished, enlarged, or changed by, and no obligations or liability shall arise or grow out of, any technical advice or service rendered by Syndyne Corporation. This warranty provides certain legal rights and additional rights may exist in an individual's state and may vary on a state to state basis.

Returns

Syndyne allows returns of equipment within 90 days of the original invoice if the items are unused, resalable, and in original packaging. Custom built items, in most cases, are not returnable. All returns shall be shipped prepaid to Syndyne's Factory address. Returns for credit are subject to a 10% or $20.00 restocking fee, whichever is larger. Returns for repair or replacement will be charged a fee if the returned items show signs of abuse, misuse, improper handling, modification, or damage. Items showing any such signs will, in most cases, not be eligible for return credit.

Claims for Missing or Damaged Goods

Syndyne carefully inspects, tests and packs, each product before shipment. Syndyne is not responsible for damage incurred during shipment. Customers should make all claims for damages directly with the carrier. Syndyne will assist you as far as possible in making any necessary claim against the carrier. Syndyne will honor claims for shortages if made within 5 days of the date the merchandise was delivered. All other shortage claims will be honored only if made in writing, within 30 days from the date of delivery of merchandise.

Deductions or Adjustments of Accounts

No deductions, discounts, or changes of any kind, except cash discounts earned, will be honored unless credit memorandum or Syndyne previously issued written authority. Cash discounts are earned only when paid on time and in accordance with the terms covering the cash discounts. Cash discounts must be previously authorized by Syndyne Corporation in writing.

Adjustments of disputed accounts or disputes of any kind made by a Syndyne representative are subject to written approval by Syndyne's Credit Manager in Vancouver, WA, before considered binding on Syndyne.

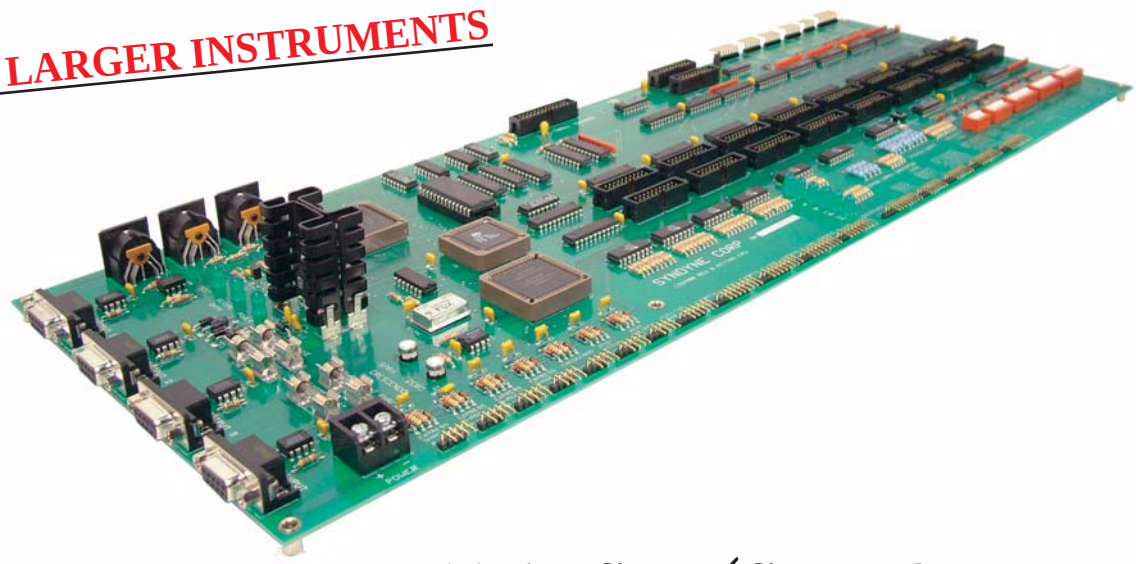
TABLE OF CONTENTS

TABLE OF CONTENTS

KEYING SYSTEM

LS2400K Keying System Controller

FOR LARGER INSTRUMENTS



Main CPU (Central Processor Unit)

FEATURES:

- Main component of Syndyne LS2400 keying systems. LS2400 keying systems are companion keying systems for Syndyne LS2464 combination action systems
- Standardized software enables LS2400K boards to be replaced or exchanged in the field without software changes by Syndyne. Organ specifications and additions can be easily changed at the job site.
- Boards are easily configured with on board switches. No external programming devices or personal computers are needed
- Rugged and Reliable design, proven in field for 9 years
- No batteries or power required to maintain board configuration, which means no maintenance or battery failure
- Controls up to 48 stops on each of 8 divisions (384 total stops)
- Over 120 different coupler types available
- Full MIDI capabilities:
  - 16 MIDI stops can be set on any division or divisions
  - Assignable MIDI stops on each division
  - MIDI volume, pitch, and expression control
  - MIDI in, MIDI out, MIDI stop out
- Four tremolo control Inputs
- Two accessory outputs
- Two utility reversible outputs (for zimbelsterns, lamps in organ, blower motor start, remote power start)
- Two on-board programmable crescendos, sforzandos, and ventil functions
- 12 step on board transposer settable on 16 General Pistons and 128 memory levels
- 2 selectable automatic pedal features
- Exchange great and choir manuals with reversible piston
- Programmable Couplers
- Non-coupling stops

SPECIFICATIONS:

System Design Intent:

The LS2400K main CPU board is to be placed in the console and is the main component of LS2400 keying systems. LS2400 keying systems are fully featured keying systems that will work with an existing combination action or can be used as companion systems with Syndyne LS2464 combination action systems. The LS2400K receives information from stop controls through LS2402K note/stop input boards. Keying signals from each manual are received through LS2402K 61 note/stop input boards (one per manual) and pedal keying signals are received from an LS2401K, 32 note pedal input board. All information needed in organ chambers is multiplexed by the LS2400K main CPU board to LS2497K, LS2473K, or LS2449K pipe driver boards, and other equipment located in organ chambers over a four wire data cable. The data cable is run from the console and daisy chained to all Chamber Driver Boards. The data cable plugs into either of two telephone type jacks on that board. Another cable is then plugged into the remaining telephone type jack on the first board and run to one of two telephone type jacks on the next board in the chamber. Another cable is then plugged into the remaining telephone type jack on the second board and run to one of two telephone type jacks on the next board in the chamber. All additional

Continued on Next Page

boards are added to the data cable in a like manner. This "daisy chain" method of connecting boards allows you to place boards in any convenient location. Outputs for four tremolos, swell shade motors, chimes, zimbelsterns, and other organ related equipment are included on boards in the system. The data cable is designed to transmit over a total cable network length of up to hundreds of feet.

DIMENSIONAL:

Length: 21 1/2"

Width: 8 1/2"

Height: 2"

MECHANICAL:

Mounting: Eight built-in standoffs for screw mounting.

Connections: All connections via plug-in connectors on the board for ease of installation.

ELECTRICAL:

Power Supply: Operates on standard organ rectifier power. Fused power supply on board is provided to operate on board electronics.

CAPABILITIES:

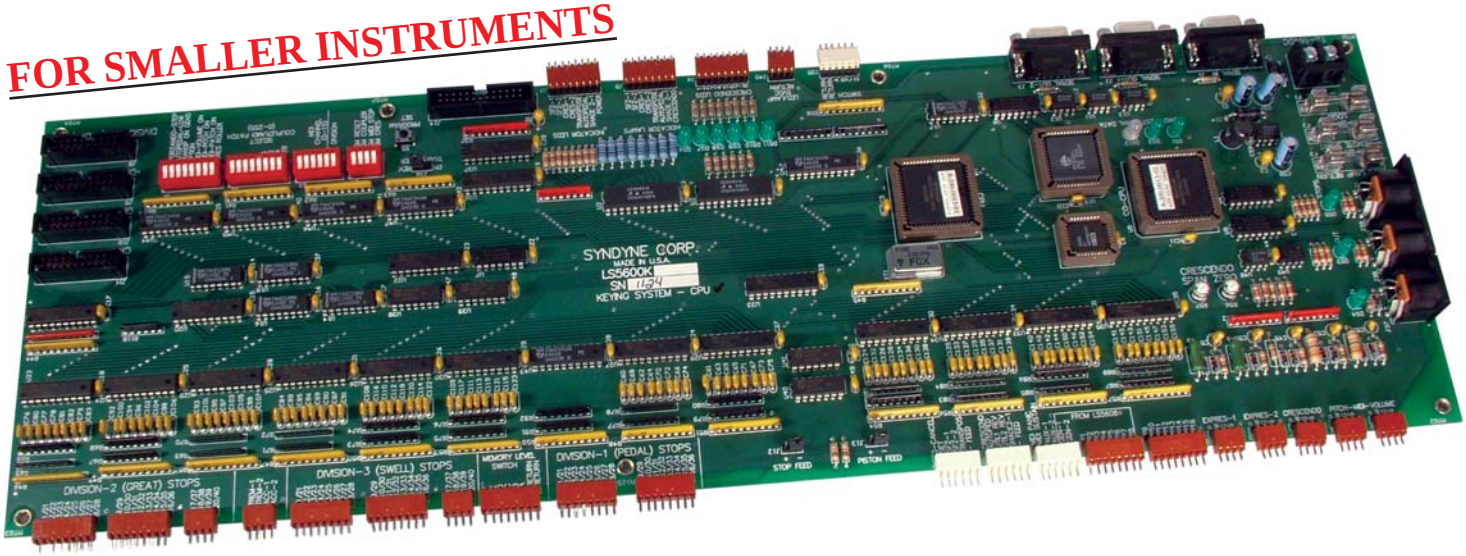
- Controls up to 48 stops per division with a maximum of 8 divisions.
- Two settable, 60 level, crescendos with outputs to drive 8 LEDs to display crescendo positions. An optional digital, crescendo position readout is available.
- Two Settable Sforzandos
- Two Sforzando Reversible Inputs
- Four Channels of Expression
- 12 Step Transposer
- Full MIDI Capabilities with 16 assignable MIDI stops in any of 8 divisions:
  - MIDI volume
  - MIDI pitch control
  - MIDI expression
  - MIDI in, MIDI out, MIDI stop out
- Four Tremolo Control Inputs
- Two Accessory Stop Inputs
- Two Utility Reversible Inputs
- Two Automatic Pedal Features (selectable on board)
- Lighted Piston outputs and LED outputs for:
  - Auto Pedal Features
  - Transposer
  - Crescendo 1
  - Crescendo 2
  - Sforzando
  - Expression

Memory: All programmed information is stored on the board without need of batteries or external power, enabling you to program all boards in advance in your shop and take them to the job.

Programming: Programming is accomplished with on-board dip switches or through the optional LS2403K Control Panel. No external device or computer is necessary for you to program the board. Future specification changes are easily added to the programming by you.

LS5600K Keying System Controller

FOR SMALLER INSTRUMENTS



Main CPU (Central Processor Unit)

FEATURES:

- Main component of Syndyne LS5600K keying systems. LS5600K keying systems are companion keying systems for Syndyne LS5608 combination action systems.
- Standardized software enables LS5600K boards to be replaced or exchanged in the field without software changes by Syndyne. Organ specifications and additions can be easily changed at the job site
- Boards are easily configured with on board switches. No external programming devices or personal computers are needed.
- Rugged, Reliable design, proven in field for 9 years
- No batteries or power required to maintain board configuration means no maintenance or battery failures
- Controls up to 56 stop controls with 20 in each manual division and 16 in the pedal
- Full MIDI capabilities:
  - 16 MIDI stops can be set on any division or divisions
  - MIDI volume, pitch, and expression control
  - MIDI in, MIDI out, MIDI stop out
- Two tremolo control outputs
- Two accessory stop outputs (when input is on the output is on)
- Two utility reversible outputs (for zimbelsterns, lamps in organ, blower motor start, remote power start)
- Two on board programmable crescendos and sforzandos
- 12 step on board transposer settable on 16 general pistons and 32 memory levels
- 2 selectable automatic pedal features
- Programmable Couplers
- Non-coupling stops

SPECIFICATIONS:

System Design Intent:

The LS5600K main CPU board is to be placed in the console and is the main component of LS5600 keying systems. LS5600 keying systems are fully featured keying systems that will stand alone, work with an existing combination action or can be used as companion systems with Syndyne LS5608 combination action systems. 56 stop inputs on the LS5600K receive information directly from stop controls. Keying signals from 2 manuals are received from 2 each LS2402K, 61 note input boards (one per manual) and pedal keying signals are received from an LS2401K, 32 note pedal input board. All information needed in organ chambers is multiplexed by the LS5600K main CPU board to Pipe Driver Boards, LS2425-7K Chime Relay, and LS2405K swell shade/stop controller boards and other equipment located in organ chambers over a four wire data cable. The data cable is run from the console to any type of board in any division and plugs into either of two telephone type jacks on that board. Another cable is then plugged into the remaining telephone type jack on the first board and run to one of two telephone type jacks on the next board in the chamber. Another cable is then plugged into the remaining telephone type jack on the second board and run to one of two telephone type jacks on the next board in the chamber. All additional boards are added to the data cable in a like manner. This “daisy chain”

Continued on Next Page

method of connecting boards allows you to place boards in any convenient location. Outputs for tremolos, swell shade motors, chimes, zimbelsterns, and other organ related equipment are included on boards in the system. The data cable is designed to transmit over a total cable network length of up to hundreds of feet.

DIMENSIONAL:

Length: 20 1/2"

Width: 7 1/4"

Height: 1 3/4"

MECHANICAL:

Mounting: Seven built-in standoffs for screw mounting.

Connections: All connections via plug-in connectors on the board for ease of installation.

ELECTRICAL:

Power Supply: Operates on standard organ rectifier power. Fused power supply on board is provided to operate on-board electronics.

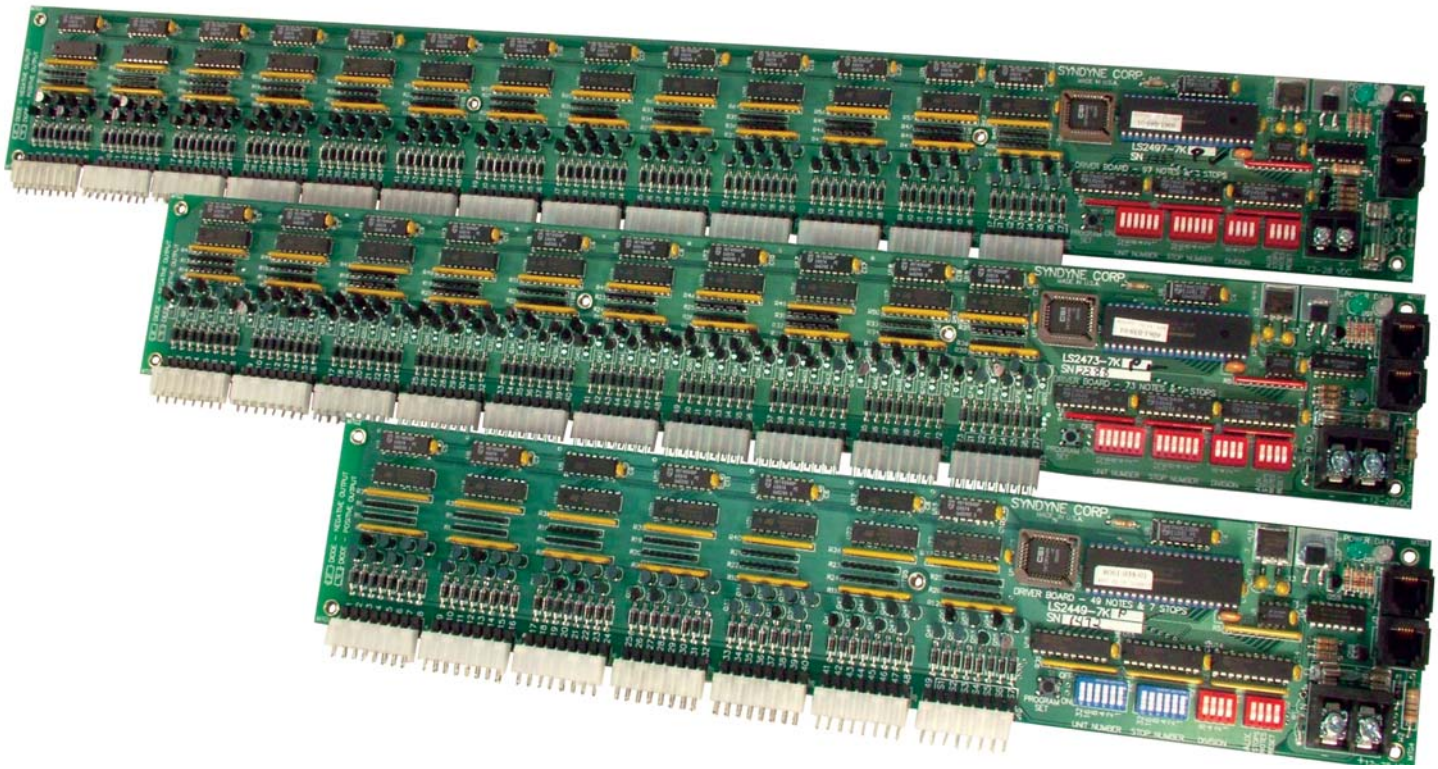
CAPABILITIES:

- 56 total stops, controlled in three divisions
- Two Settable Crescendos with outputs to drive 8 LED's to display crescendo positions
- Optional digital crescendo position readout is available
- Two Settable Sforzandos
- Two Sforzando Reversible Inputs
- Two Channels of Expression
- 12 Step Transposer
- Programmable Couplers
- Non-Coupling Stops
- Full MIDI Capabilities
- 16 MIDI stops can be set on any division
- MIDI volume
- MIDI pitch control
- MIDI expression
- MIDI in, MIDI out
- Two Tremolo Control Inputs
- Two Accessory Stop Inputs
- Two Utility Reversible Inputs (for zimbelsterns, starting blower motors, etc.)
- Two Automatic Pedal Features (selectable on-board)
- Lighted Piston Outputs and LED Outputs for:
  - Auto Pedal Features
  - Transposer
  - Crescendo 1
  - Crescendo 2
  - Sforzando
  - Expression

Memory: All programmed information is stored on the board without need of batteries or external power, enabling you to program all boards in advance in your shop and take them to the job.

Programming: Programming is accomplished with on-board dip switches or through the optional LS2403K Control Panel. No external device or computer is necessary for you to program the board. Future specification changes are easily added to the programming.

LS2449-7KP, LS2473-7KP, LS2497-7KP



49, 73, and 97 Note Positive Pipe Drivers

FEATURES:

- A part of LS5600 and LS2400 keying systems
- Standardized software enables boards to be replaced or interchanged in the field without factory software changes
- No external programming devices or personal computer needed
- Boards are easily configured with switches on board and can be conveniently programmed in your shop
- Rugged and Reliable design
- No batteries or power required to maintain board configuration means no maintenance or battery failure
- Standard outputs drive 20 ohm magnets - higher outputs are available
- 7 Programmable stop line outputs

SPECIFICATIONS:

Design Intent:

The pipe driver boards are designed to be used in LS2400 and LS5600 Syndyne Multiplexed Keying Systems. The LS2497-7K will drive up to 97 notes. An LS2473-7K pipe magnet driver board will drive 73 or less notes and an LS2449-7K will drive 49 or less. All three types of boards come with standard outputs capable of operating 20 ohm magnets. The pipe driver boards are equipped with connectors for ease of installation and service. Organ power from any good quality organ rectifier is connected to two large screw terminals. Pipe magnet outputs on the board are grouped into eight outputs per connector. Each board has two telephone type jacks, one to receive and one to pass on data from a four wire data cable. The data cable provides all information needed by equipment in all organ chambers. Boards can be connected to the data cable in any order, allowing boards to be mounted in any location that is convenient.

LS2449-7KP Dimensional:

Length: 15 1/4"

Width: 3 1/2"

Height: 1 1/4"

LS2473-7KP Dimensional:

Length: 19 3/8"

Width: 3 1/2"

Height: 1 1/4"

LS2497-7KP Dimensional:

Length: 23 5/8"

Width: 3 1/2"

Height: 1 1/4"

Mechanical:

Mounting: Built-in standoffs for screw mounting. Modular design permits mounting each board where it is convenient.

Connections: All connections via plug-in connectors on the board for ease of installation.

ELECTRICAL:

Power Supply: Operates on standard Regulated Organ power

Programming: Programming any of the models of pipe magnet driver boards is accomplished in the same manner. The board you are programming must have power supplied to the two terminal power connector. The board does not have to be connected to any other parts of the keying system when being programmed. There are 4 sets of DIP (dual in-line package) switches where you select the program mode, division, stop number and type of stop unit for each stop.

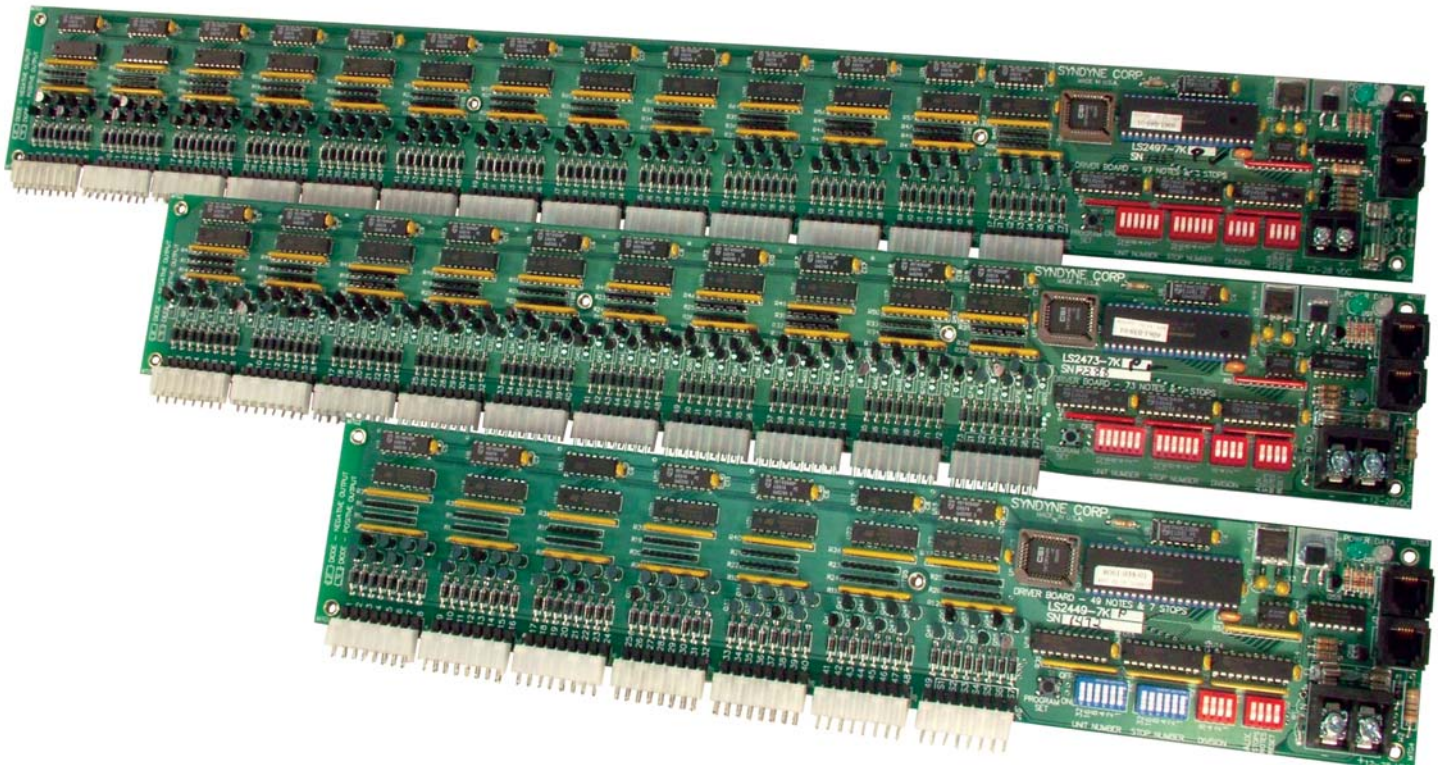
Syndyne driver boards can be configured to play a large variety of pitches, mixtures or resultants and the seven stop line outputs can be configured to turn on with any stop from any division. The seven stop line outputs can be configured as a 7-bit digital Expression output (128 steps of resolution) and wired directly to inputs of the LS2407K board, Syndyne's digital to analog expression driver.

CAPABILITIES:

Outputs: Standard outputs will drive 20 ohm magnet loads using a 15VDC Power supply

Memory: All programmed information is stored on the board without needing batteries or external power, enabling you to program all boards in advance in your shop and take them to the job.

LS2449KN, LS2473KN, LS2497KN



49, 73, and 97 Note Negative Pipe Drivers

FEATURES:

- A part of LS5600 and LS2400 keying systems
- Standardized software enables boards to be replaced or interchanged in the field without factory software changes
- No external programming devices or personal computer needed.
- Boards are easily configured with switches on board and can be conveniently programmed in your shop
- Rugged and Reliable design
- No batteries or power required to maintain board configuration means no maintenance or battery failure
- Positive or negative outputs available
- Standard outputs drive 20 ohm magnets

SPECIFICATIONS:

Design Intent:

The pipe driver boards are designed to be used in LS2400 and LS5600 Syndyne Multiplexed Keying Systems. The LS2497-7K will drive pipe magnets for up to 97 notes. An LS2473-7K will drive 73 or less pipe magnets and an LS2449-7K will drive 49 or less pipe magnets. All three types of boards come with standard outputs capable of operating 20 ohm magnets. The pipe driver boards are equipped with connectors for ease of installation and service. Organ power from any good quality organ rectifier is connected to two large screw terminals. Pipe magnet outputs on the board are grouped into eight outputs per connector. Each board has two telephone type jacks, one to receive and one to pass on data from a four wire data cable. The data cable provides all information needed by equipment in all organ chambers. Boards can be connected to the data cable in any order, allowing boards to be mounted in any location that is convenient.

LS2449-7K Dimensional:

Length: 14 5/8"

Width: 3 3/8"

Height: 1 1/4"

LS2473-7K Dimensional:

Length: 18 7/8"

Width: 3 3/8"

Height: 1 1/4"

LS2497-7K Dimensional:

Length: 23"

Width: 3 3/8"

Height: 1 1/4"

Mechanical:

Mounting: Five built-in standoffs for screw mounting. Modular design permits mounting each board where it is convenient.

Connections: All connections via plug-in connectors on the board for ease of installation.

ELECTRICAL:

Power Supply: Operates on standard organ rectifier power.

Programming: Programming any of the models of pipe magnet driver boards is accomplished in the same manner. The board you are programming must have power supplied to the two terminal power connector. The board does not have to be connected to any other parts of the keying system when being programmed. There are 3 sets of DIP (dual in-line package) switches where you select the program mode, division, stop number and type of stop unit for each stop.

Syndyne driver boards can be configured to play a large variety of pitches, mixtures or resultants and the seven stop line outputs can be configured to turn on with any stop from any division. The seven stop line outputs can be configured as a 7-bit digital Expression output (128 steps of resolution) and wired directly to inputs of the LS2407K board, Syndyne's digital to analog expression driver.

CAPABILITIES:

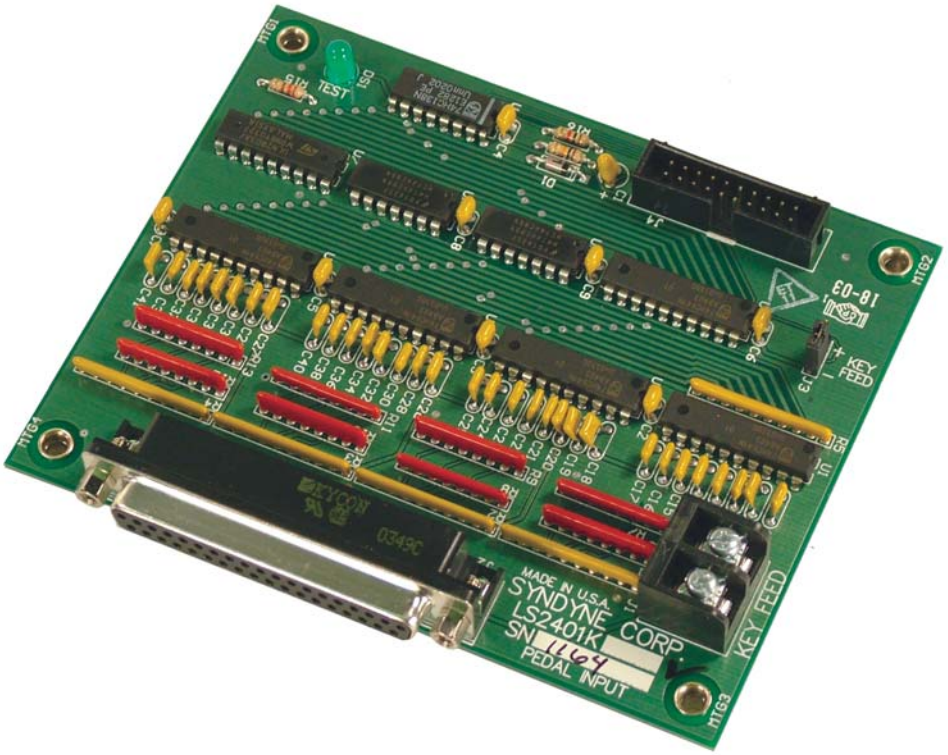
Outputs: Standard outputs will drive 20 ohm magnet loads.

Memory: All programmed information is stored on the board without needing batteries or external power, enabling you to program all boards in advance in your shop and take them to the job.

LS2401K Pedal Input Board

FEATURES:

- Compact for mounting flexibility
- Rugged and Reliable
- All Connections are made through Plug In
- Pedal Board can be easily unplugged for moving



SPECIFICATIONS:

DESIGN INTENT:

The LS2401K pedal input board is used to send note information from pedal board keys to either an LS2400K or LS5600K keying system controller.

DIMENSIONAL:

Length: 5"

Width: 4"

Height: 3/4"

MECHANICAL:

Mounting: Four built-in stand offs for screw mounting

Connections: All 32 pedal note inputs are connected to a 37 pin "D" connector. This connector is very durable. It withstands multiple connects and disconnects, allowing the pedal board assembly to be repeatedly removed from the console. Pedal note information is sent to a keying system controller through a ribbon cable plug-in connector.

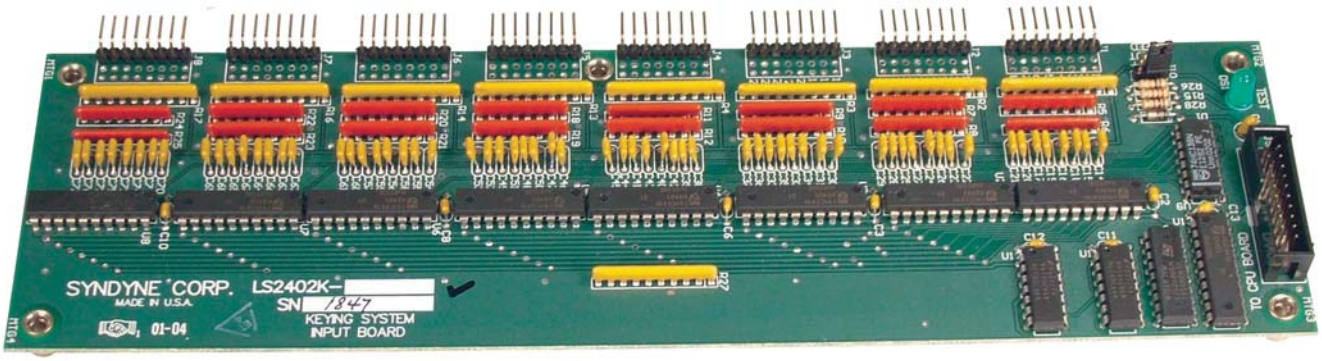
ELECTRICAL:

Power Supply: All power is provided by the keying system controller circuit board.

Note Signals: Key Feed is user settable for either negative or positive by an on-board jumper (shunt).

Removable: A terminal block is provided for the key contact feed through the 32 pin "D" connector. This terminal block should be used if the pedal board is removable.

LS2402K 61 Note/48 Stop Input Board



FEATURES:

- Compact for flexibility of mounting
- Rugged and reliable
- All connections are made through plug-in connectors
- Multiplexes note or stop information to the keying system controller

SPECIFICATIONS:

DESIGN INTENT:

The LS2402K 61 note/48 stop input board has two different uses. It is used to send note information to either an LS2400K or LS5600K keying system controller from a set of 61 manual keys. It is also used to send stop signals from up to 48 stops to the LS2400K controller. One LS2402K is required for each division of stops in an LS2400 keying system. One LS2402K is required in each manual division for keying input in either LS2400K or LS5600K Systems.

DIMENSIONAL:

Length: 10 3/8"

Width: 3 1/2"

Height: 3/4"

MECHANICAL:

Mounting: Five built-in stand offs for screw mounting.

Connections: Inputs from manual keys or stop lines (LS2400K System Only) are connected to LS2402K boards by a series of 8 pin, plug-in connectors. The information is sent to an LS2400K or LS5600K keying system controller through a ribbon cable plug-in connector.

ELECTRICAL:

Power Supply: All power is provided by the keying system controller circuit board.

Input Signals: Signal polarity is selectable by positioning an on-board shunt (jumper) for appropriate key feed.

LS2403K Organ Resource Control Panel

FEATURES:

- Fully Featured and intuitive control center.
- Only three buttons for complete control
- Highly Visible 40 character display
- Console mountable with or without brass plate
- Capable of displaying the following:
  - Crescendo Position
  - Expression Position
  - General Piston
  - Transposer Level
  - Memory Level

WITH BRASS MOUNTING PLATE

SPECIFICATIONS:

Design Intent

Designed with both the organist and organ builder in mind; to provide quick easy access to all of the keying systems console controls with only 3 buttons. Plus provide a beneficial display of critical functions such as Crescendo and Expression shoe position, Transposer Level and Memory Level.

Cutout Dimensional

Height: 3 1/8"

Width: 4 7/8"

Depth: 1 1/2"

Brass Plate Dimensional

Height: 3 3/4"

Width: 5 1/2"

WITHOUT BRASS MOUNTING PLATE

Mechanical

Mounting with Brass Plate: A cutout is made in the organ console and the brass mounting plate is attached to the front of the console with 6 small brass screws.

Mounting without Brass Plate: A cutout is made for the Bezel and the bezel is mounted from the front. Material is removed from the backside of the console to a thickness of 1/2" then the LS2403K is mounted through the back of the console with 4 screws. Three momentary push buttons of your choice (such as Pistons) can be used for the UP Down and Enter buttons and wired to a connector on the back of the LS2403K.

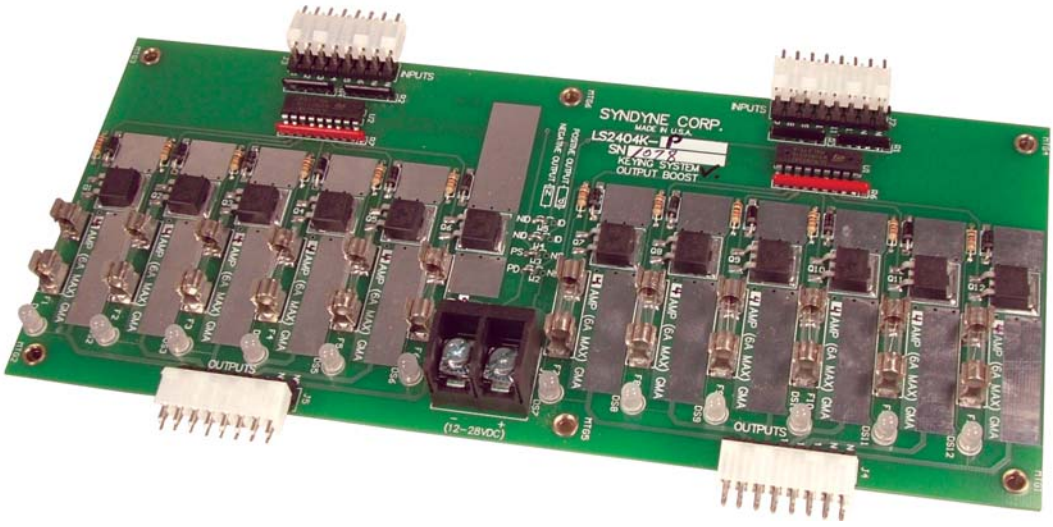
Electrical

All electrical power is supplied from the CPU board (LS2400K or LS5600K). Connections between the CPU board and the Resource Center are made through an 8' ribbon cable. Connectors are provided on the rear for remote mounting of push buttons switches and for memory level control to either of Syndyne's Combination Action systems.

Capabilities

- 36 different display combinations of Crescendo, Expression, Transposer, General Piston and Memory Level.
- Menu driven controls.
- Adjustable contrast and backlight level.
- Sleep feature.
- 16 individual access codes to protect memory level settings.
- 128 level memory controller with lockouts. (32 levels when used with an LS5600k System)
- 12 note transposer.
- 16 MIDI Patch Changes on 16 general pistons for all memory levels.
- Program Crescendo.
- Program Couplers.
- Program MIDI Stops, includes octave transpose, MIDI On Velocity and MIDI Expression assignable to any expression shoe input.

LS2404K Output Boost Board



FEATURES:

- A part of the LS5600K and LS2400K keying systems. or can be used with other controls.
- Provides twelve, fused, 4 amp drive circuits.
- Output activity indicators.
- Positive-In/Positive-out, Positive-In/Negative-out, Negative-In/Negative-out or Negative-In/Positive-out.
- Fly back voltage protected.
- Outputs can be paralleled for additional drive current.

SPECIFICATIONS:

DESIGN INTENT:

The LS2404K Output Boost Board is designed for use with either the LS2400K or LS5600K keying systems. The LS2404K is ideal for situations in which there is a need for higher drive currents than our standard outputs can provide. Each Output is fused, has an indicator LED and is capable of driving 4 Amps of DC current.

DIMENSIONAL

Length 10-1/4"

Width 5-1/2"

Height 1 1/4"

MECHANICAL:

Mounting: Six built-in standoffs are provided for screw mounting.

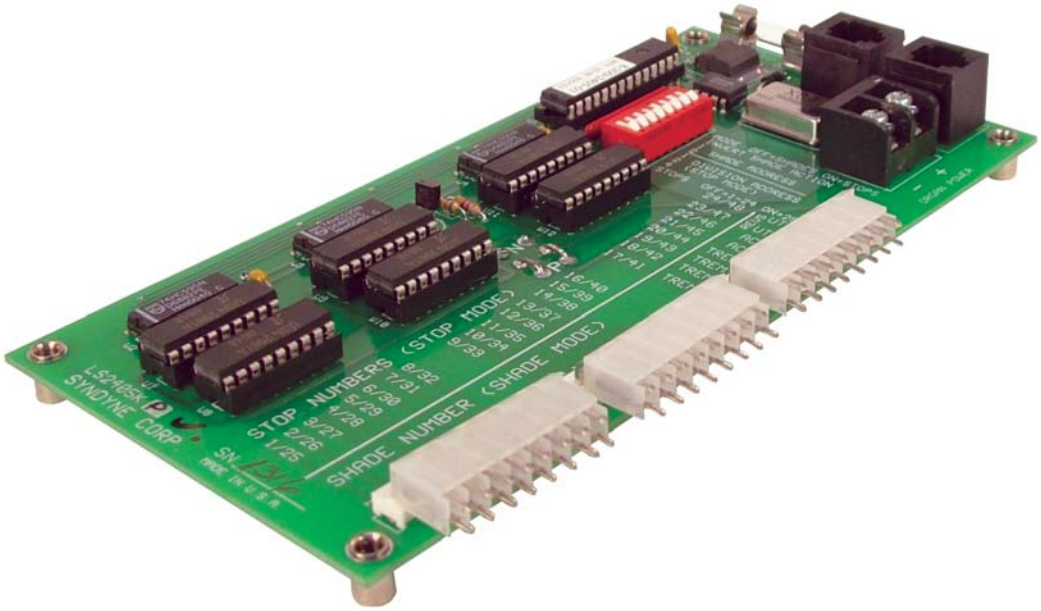
Connections: A large terminal block is provided for power connections and standard plug-on connectors are provided for inputs and outputs.

ELECTRICAL:

Power Supply: Operates on typical regulated organ power between 12-28VDC.

Polarities: Input and output signal polarities must be specified when ordering.

LS2405K Swell Shade/Stop Driver Board



FEATURES:

- Used in LS5600 and LS2400 keying systems
- Standardized software enables boards to be replaced or interchanged in the field without factory software changes
- No external programming devices or personal computer needed. Boards are easily configured with switches on-board and can be conveniently programmed in your shop
- Rugged and Reliable design
- No batteries or power required to maintain board configuration
- Settable for two different functions
  1. Controls a 16 position shade engine, 4 tremolo outputs, 2 accessory stop outputs and 2 utility reversible outputs
  2. Provides 24 stop outputs
- Boards with all negative or all positive outputs are available

SPECIFICATIONS:

System Design Intent:

All information needed for the operation of LS2405K boards is received over a four wire data cable from the console. Each LS2405K board is equipped with plug in connectors for ease of installation and service. Organ power from any good quality organ rectifier is connected to two large screw terminals. Each board has two telephone type jacks, one to receive and one to pass on data from a four wire data cable. The data cable provides all information needed by equipment in all organ chambers. Boards can be connected to the data cable in any order, allowing boards to be mounted in any convenient location. By setting an on board DIP (dual in-line package) switch the LS2405K board can be used for 2 different functions. You must specify either all positive or all negative outputs.

Dimensional:

Length: 7”

Width: 3 7/8”

Height: 1”

Mechanical:

Mounting: 4 built-in standoffs are provided for screw mounting. Modular design permits mounting each board where it is convenient.

Connections: All connections via plug-in connectors on the board for ease of installation.

Electrical:

Power Supply: Operates on standard organ rectifier power. On-board power supply provided to operate electronics.

CAPABILITIES:

Outputs: By setting an on board DIP (dual in-line package) switch the LS2405K board can be used for two different functions. Turning the DIP switch "off" sets a board to operate a swell shade engine with up to 16 positions, provide on/off outputs for 4 tremolos, or provide 2 accessory stop outputs and 2 utility outputs. Turning the DIP switch "on" will set a board to provide signals for 1-24 stop actions in a division. If a division has more than 24 straight ranks, another LS2405K can be used to provide signals for stop actions 25-48. You can specify either all positive or all negative outputs. Standard outputs will drive 40 ohm loads.

Swell Shade Outputs: The LS2405K will provide either on or off outputs for the power stroke of a swell shade engine. Swell engines can have up to 16 positions.

Tremolo Outputs: There are four independent outputs to provide a signal to start and stop four different tremolo units.

Accessory Outputs: There are two accessory input pins on LS5600K & LS2400K controller boards. When either pin is shorted to ground, its corresponding output on all LS2405K boards in the keying system is energized and remains energized until the input is returned to normal.

Utility Reversible Outputs: There are 2 utility reversible input pins on LS5600K and LS2400K controller boards. When either pin is momentarily shorted to ground, its corresponding output on all LS2405K boards in the keying system are energized and remain energized until the input pin is momentarily shorted to ground again.

Stop Action Outputs: When set to drive straight chest stop actions each LS2405K board will drive 24 stop action magnets. Standard drivers will drive 40 ohm magnets.

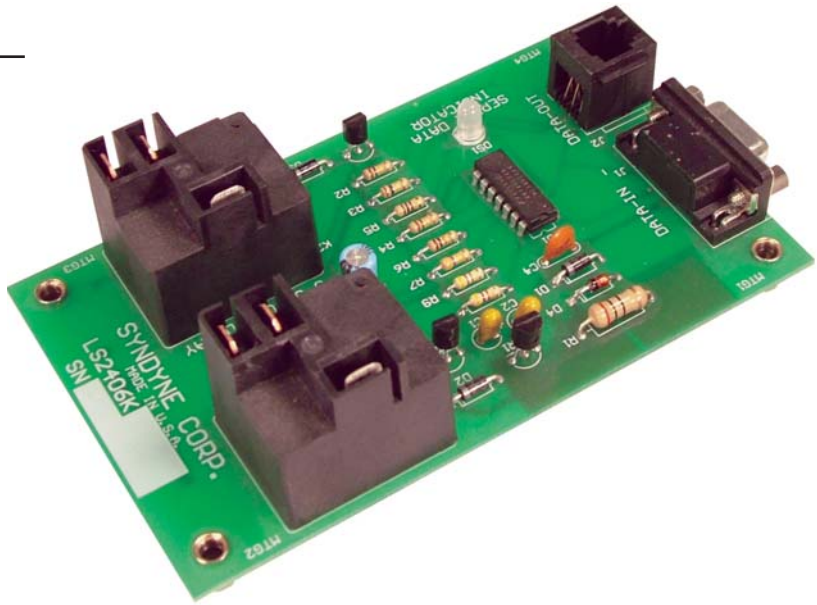
Memory: All programmed information is stored on the board without need of batteries or external power, enabling you to program all boards in advance in your shop & take them to the job.

Programming: Provided with all functions available. No field programming is necessary. An eight position DIP switch on-board is used to set all board options.

LS2406K Remote Start/Transition Board

FEATURES:

- A part of the LS5600K and LS2400K keying systems.
- Provides two remote start relay controls from the console via the serial data cable.
- Serial Data activity LED indicator.
- Easy transition from serial data cable to flat leads.
- Two 20A N.O. or two 10A N.C. contacts



SPECIFICATIONS:

DESIGN INTENT:

The LS2406K Remote Start Board is designed for use in either the LS2400K or LS5600K keying systems (see LS2400K and LS5600K Instruction Manuals for a more complete description of Syndyne's keying systems). The LS2406K is ideal for installations where there is a need to turn on a second power supply in the chamber and/or a blower from the console. The two class 9A relays are energized 3 seconds apart when the keying system in the console is energized. Each relay has a 240VAC 20A N.O. contact and a 10A N.C. contact which can be used to energize a low voltage motor or power supply contactor. Additionally there is a two color serial data indicator to monitor data activity on the data cable.

DIMENSIONAL

Length 5 1/2"

Width 3"

Height 2"

MECHANICAL:

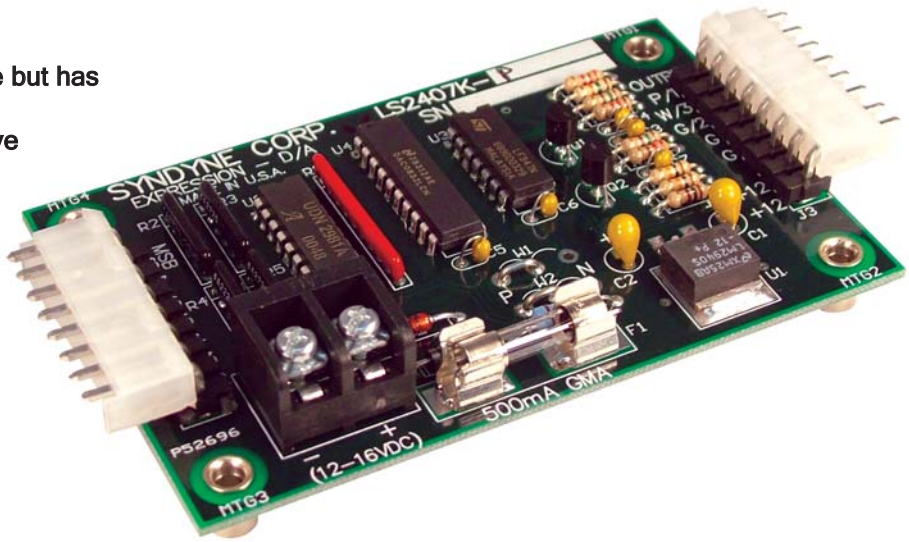
Mounting: Four built-in standoffs for screw mounting. Connections: 1/4" solder less spade connectors are provided for the relay connections. DB-9 and an RJ11 (phone jack) connectors are provided for connections to the serial data cable.

Electrical: Power Supply: Operates on typical regulated organ power between 12-16VDC. Power is sourced through the serial data cable via the console power supply.

LS2407K Expression Control Board

FEATURES:

- 8-bit Digital to Analog Conversion
- 256 Steps of Expression
- Designed to work with the Arndt Swell Engine but has the capacity for use with other Engines
- Digital Input Can be either Positive or Negative



SPECIFICATIONS:

System Design Intent:

This board performs an 8-bit digital to analog conversion resulting in a resolution of up to 256 steps. It was designed specifically to work with the Arndt Organ Supply swell engine but is flexible enough to potentially operate other analog input devices (consult with the factory for your unique application). The LS2407K's 8-digital inputs can be ordered for either a negative or positive polarity.

Dimensional

Length 4 1/2"

Width 2 1/2"

Height 1 1/4"

Mechanical

Mounting: Four built-in standoffs for screw mounting.

Connections: A large terminal block is provided to connect power to the board and plug-in connectors are provided for input and output connections.

Electrical

Power Supply: Operates on typical regulated organ power between 12-16VDC.

Capabilities

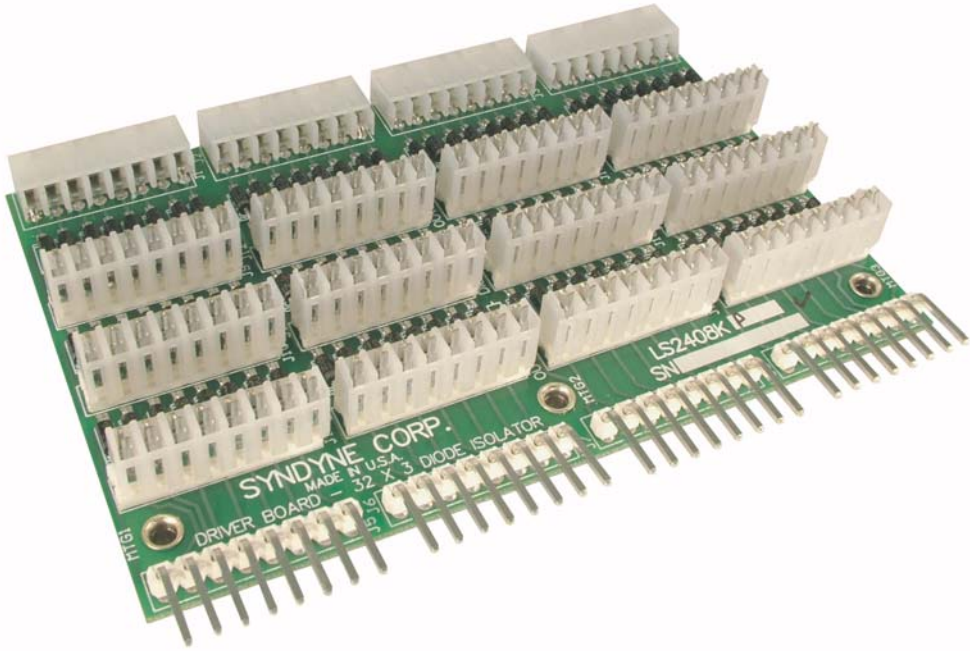
- Arndt Swell Engine: The Arndt swell engine can potentially obtain a resolution of 64 steps and so it is recommended that at least 6 (Inputs 8-3) of the digital inputs be used. A Syndyne pipe driver board's 7 Stop line outputs can be configured as a 7-bit digital Expression output (128 steps of resolution) and wired directly to inputs of the LS2407K board.

- Other applications: A 12VDC reference plus inputs for the upper and lower analog limits are available to interface with other analog input devices.

LS2408K Diode Isolator Board

FEATURES:

- A part of the LS5600K and LS2400K keying systems.
- Rugged and reliable design
- Isolates 3 Ranks of 32 notes.
- Expandable to 6 Ranks of 64 notes.
- Will plug onto Syndyne 73 note driver board outputs.



SPECIFICATIONS:

DESIGN INTENT:

The LS2408K Diode Isolator Board is a part of either the LS2400K or LS5600K keying systems. The Diode Isolator Board is designed for use with the LS2473-7KH(N/P) High current driver board and the LS2404K Output Boost board as a means of driving up to 6 straight ranks from a single driver board. The LS2408K is capable of isolating 3 ranks of 32 notes and is expandable to 6 ranks of 64 notes. Output polarity must be specified when ordering.

DIMENSIONAL

Length 5 1/2"

Width 4"

Height 1"

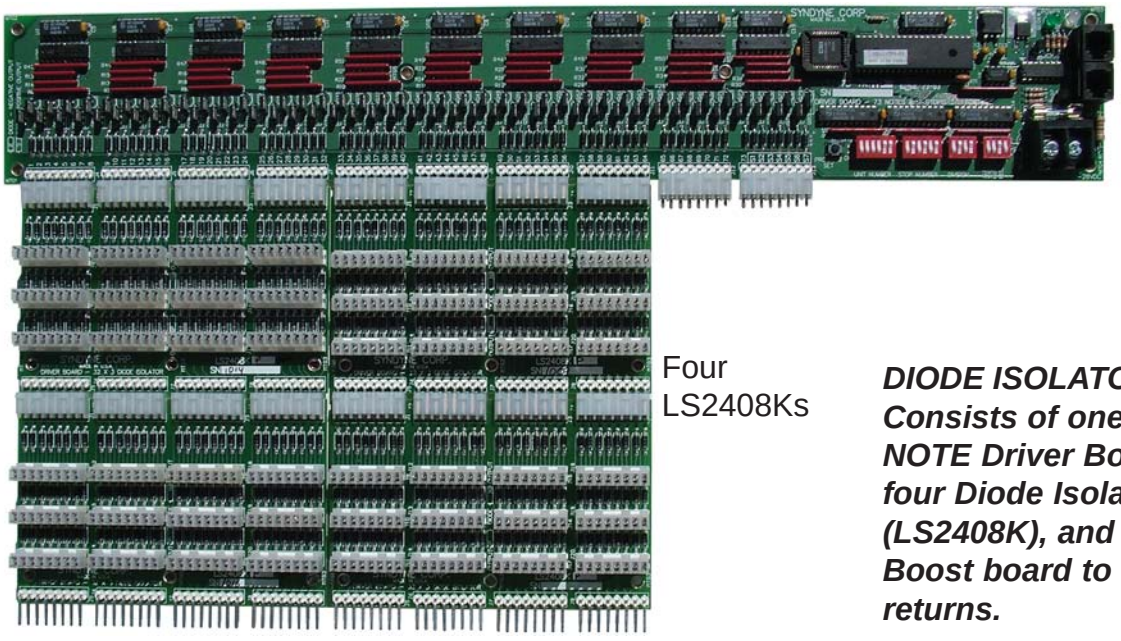
MECHANICAL:

Mounting: Three built-in standoffs for screw mounting.

Connections: Plug-in connectors are provided for all connections.

ELECTRICAL:

Power Supply: Operates on typical regulated organ power between 12-24VDC as sourced from the LS2473-7KH board.



LS2473KHP

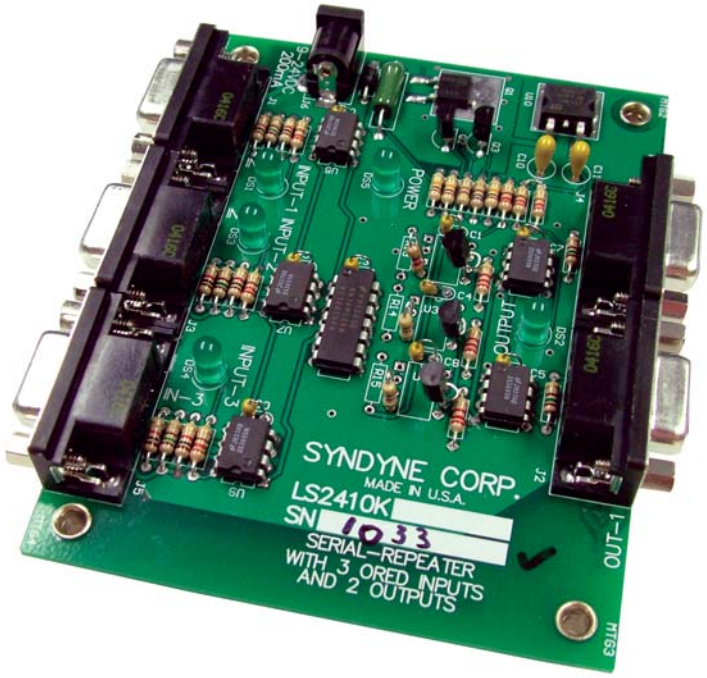
Four LS2408Ks

DIODE ISOLATOR SYSTEM: ***Consists of one high output 73 NOTE Driver Board (LS2473KHP), four Diode Isolator Boards (LS2408K), and one LS2404K Output Boost board to switch the chest returns.***

LS2410K Serial Repeater

FEATURES:

- Expand Serial Data cable range or add a third plug-in for movable consoles
- Two Serial Data Output drivers
- Three ORed Serial Data Inputs
- 2.1mm 9-24VDC 200mA wall pack power or sourced from CPU Remote Start circuit



SPECIFICATIONS:

DESIGN INTENT:

The LS2410K Serial-Repeater is designed to provide a convenient way of creating three serial data plug-in locations for a movable console. Should the need arise it could also be used to extend a data cables length. Two Serial Output connectors are available for convenient signal distribution to two different chambers.

MECHANICAL:

Length: 4 1/2"

Width: 31/2"

Height: 1"

MOUNTING:

Four PCB standoffs are provided for screw mounting using a #6 screw.

ELECTRICAL:

Power can be sourced through the serial data cable from the Remote Start circuit of the LS5600K board or a 2.1mm power jack is available for 200mA 9-12VDC wall jack power supply.

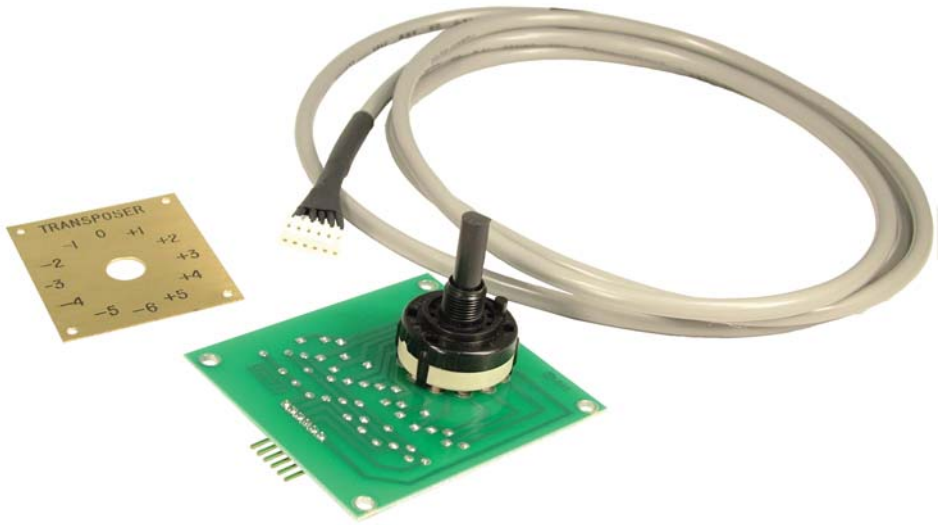
CONNECTIONS:

DB-9 connectors are provided for all serial data cable connections. A 2.1mm power jack is available for an alternate power source.

LS2412TC Transposer Control

FEATURES:

- A part of the LS5600K and LS2400K keying systems.
- 6 steps down 5 steps up & 0.
- Brass plate with black lettering.



SPECIFICATIONS:

Design Intent:

The LS2412TC 12 step transposer is designed for use in either the LS2400K or LS5600K keying systems. It plugs into the keying controller board's transposer input. Mounts through most name boards. The LS2412TC is not needed if an LS2403K Control Panel is used in the system.

Circuit Board Dimensional:

Height: 2 3/4"

Width: 2 1/2"

Depth: 1/2" behind a 3/4" name board

Engraved Plate Dimensional:

Height: 2"

Width: 1 3/4"

Depth: Knob extends approximately 3/4" beyond engraved plate.

Mechanical:

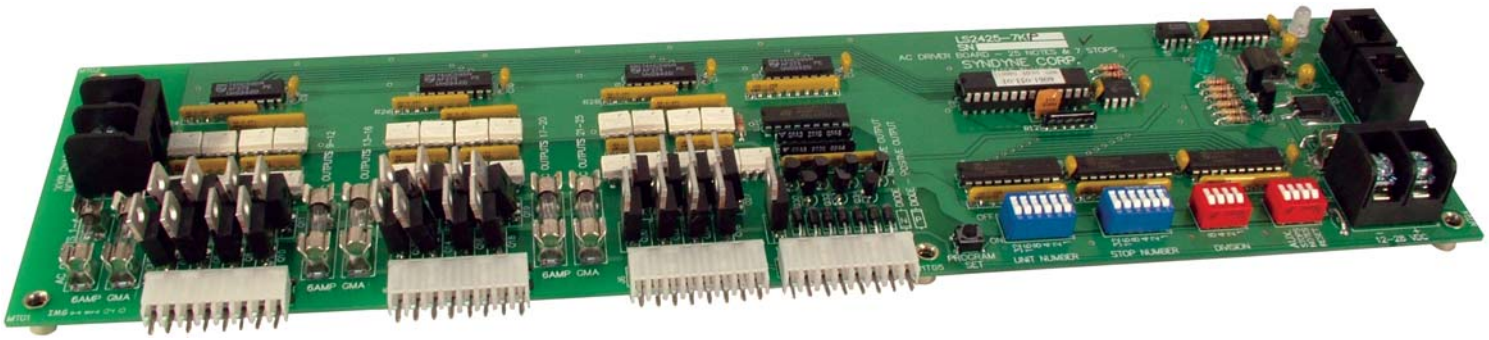
Mounting: There are four mounting holes in the P.C. Board and brass plate for screw mounting.

Connections: 6' cable with plug on connector.

Electrical:

Power Supply: Operates on power supplied from the LS2400K or LS5600K keying system.

LS2425-7K 25 Note 7 Stop AC Chime Driver



FEATURES:

- A part of the LS5600K and LS2400K keying systems.
- Standardized firmware enables boards to be replaced or interchanged in the field without factory firmware changes.
- No external programming devices or computers needed.
- Boards are easily configured with on-board switches and can be conveniently programmed in your shop.
- Rugged and reliable design
" No batteries or power required to maintain board configuration.
- Drives 25 note AC chimes at 5Amps.
- Drives 7 DC Stop Lines. Specify Positive or Negative when ordering.
- Fused AC Outputs

SPECIFICATIONS:

DESIGN INTENT:

The LS2425-7K Chime Driver Board is one of a family of driver boards designed for use in either the LS2400K or LS5600K keying systems.

The LS2425-7K Chime Driver Board is capable of driving a 25note 5Amp AC Chime. Plus there are an additional 7 DC stop line drivers capable of driving a 20ohm load with a 15VDC supply. Output polarity for these stop line drivers must be specified when ordering.

DIMENSIONAL

Length 14 1/4"

Width 4 1/4"

Height 1"

MECHANICAL:

Mounting: Five built-in standoffs for screw mounting.

Connections: Two large terminal blocks are provided to connect both AC and DC power to the board and plug-in connectors are provided for all output connections.

ELECTRICAL:

Power Supply: Operates on typical regulated organ power between 12-24VDC. AC power is supplied by a chime transformer.

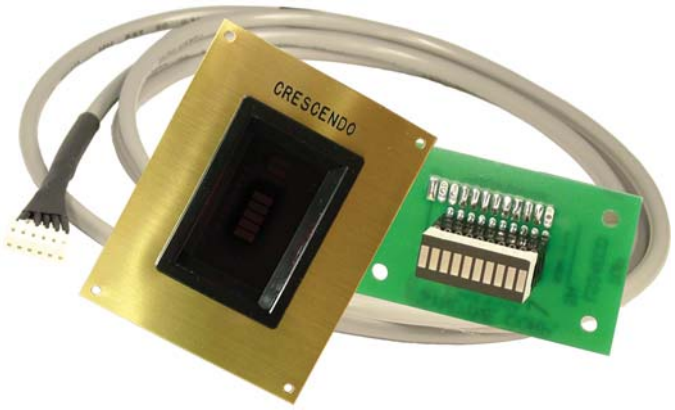
CONFIGURING:

Syndyne driver boards can be configured to play a large variety of pitches, mixtures or resultants and the seven stop line outputs can be configured to turn on with any stop from any division. The seven stop line outputs can be configured as a 7-bit digital Expression output (128 steps of resolution) and wired directly to inputs of the LS2407K board (Syndyne's digital to analog expression driver). To configure a driver board simply set the four sets of DIP switches for the desired operation (see Programming Tables) and push the "Program Set" button. The new setting will be instantly stored in permanent memory. Repeat this process for as many stops as desired (maximum of 48/division). Settings can be overwritten or cleared as desired.

LS24ECD Electronic Crescendo Display

FEATURES:

- A part of the LS5600K and LS2400K keying systems.
- An 8 segment red LED bar graph with red lens and brass mounting plate.
- Adjustable name board thickness



SPECIFICATIONS:

DESIGN INTENT:

The LS24ECD Crescendo Display is designed for use in either the LS2400K or LS5600K keying systems (see LS2400K and LS5600K Instruction Manuals for a more complete description of Syndyne's keying systems). Plugs into keying system's crescendo LED output. Mounts through most name boards. Is not needed when using an LS2403K Control Panel.

DIMENSIONAL

Height 3 1/2"

Width 2 3/8"

Depth 3/4" - 1"

MECHANICAL:

Mounting: There are four mounting holes in display and brass plate for screw mounting.

Connections: 6' cable with plug on connector.

ELECTRICAL:

Power Supply: Operates on power supplied from the LS2400K or LS5600K keying system.

LS24MP MIDI Plate

FEATURES:

- A part of the LS5600K and LS2400K keying systems.
- Easy access to all three MIDI ports, MIDI-IN, MIDI-OUT MIDI STOPS.
- Brass plate with black lettering.

SPECIFICATIONS:

Design Intent:

The LS24MP MIDI Plate is designed for use in either the LS2400K or LS5600K keying systems. Plugs into keying system's MIDI Ports and mounts through most organ consoles shells.

Engraved Plate Dimensional:

Height: 2"

Width: 4 3/8"

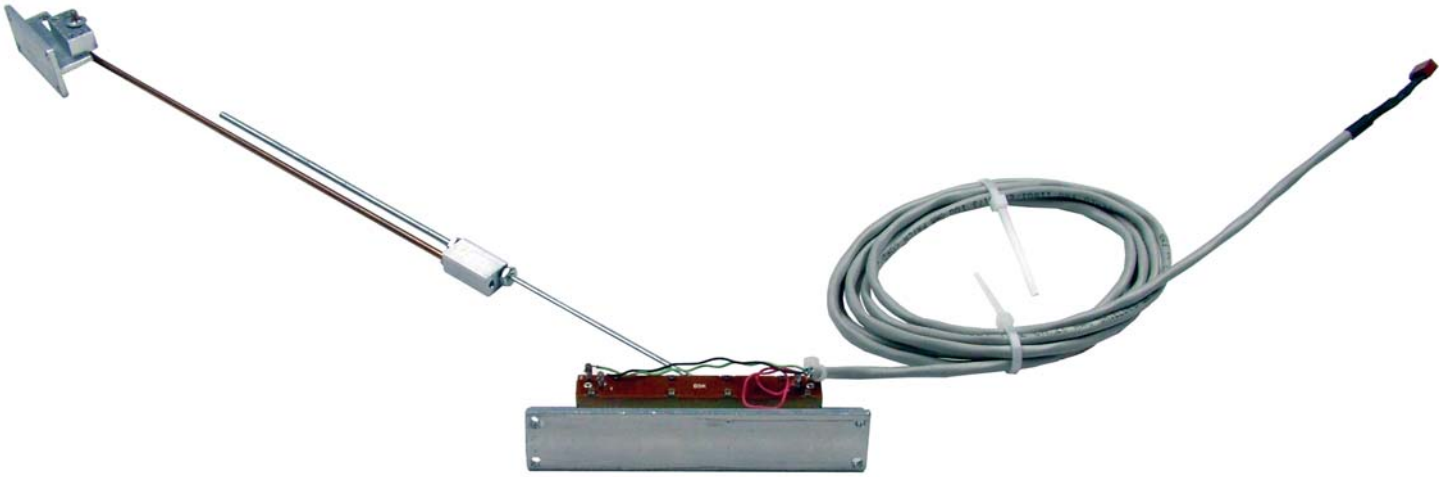
Depth: 1" with 6' of cable

Mechanical:

Mounting: There are six mounting holes in the brass plate for screw mounting.

Connections: 6' cables with MIDI jacks.

LS24POT Shoe Mountable 5K Slide Potentiometer



FEATURES:

- 2 1/4" of travel
- Adjustable shoe bracket
- Adjustable linkage rod from 12"-21"
- Plugs right into any Expression or Crescendo inputs on the LS5600K CPU board

SPECIFICATIONS:

Design Intent:

The LS24POT is intended to provide a simple yet reliable means of adding a potentiometer to an existing shoe.

Mechanical:

Shoe Bracket Dimensions

Height: 1"

Width: 1"

Length: 1"

Linkage rod position is adjustable by ± 1/2"

Potentiometer Bracket Dimensions

Height: 1"

Width: 1 1/2"

Length: 4 3/4"

Linkage Rod Length is adjustable from 12-21"

Potentiometer

- Travel 2 1/4"
- Resistance 5000 Ohms

Mounting:

There are four mounting holes in both the shoe bracket and the potentiometer bracket for attachment with #6 screws. The shoe bracket mounts to the underside of the shoe and the potentiometer bracket mounts to the floor of the console.

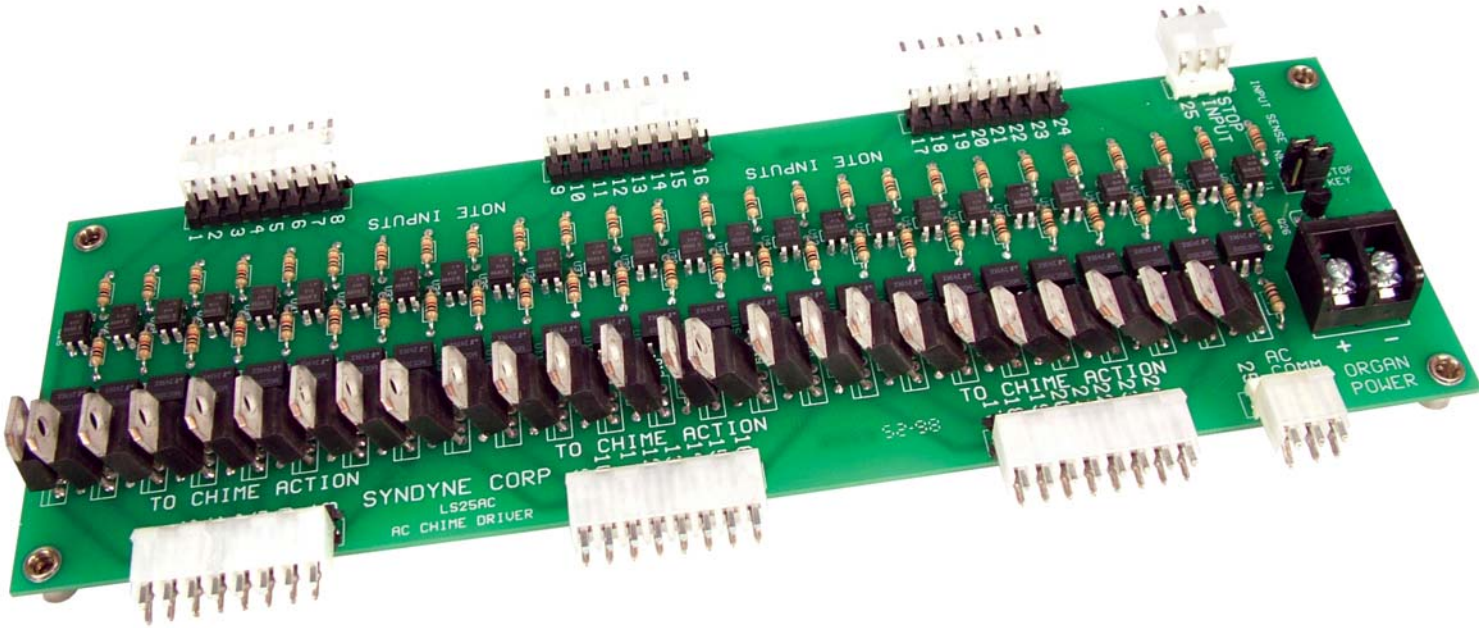
Electrical:

Power for this board is supplied through the cable and from the LS5600K.

Connections:

An 8' cable with connector are provided.

LS25AC 25 Note AC Chime Relay



FEATURES:

- Operates 25 note AC chimes from existing key contacts or from existing relay lines.
- Note inputs will accept positive or negative signals
- Stop input will accept positive or negative signal
- 5 amp output capability
- Rugged and reliable design

SPECIFICATIONS:

Design Intent:

The LS25AC chime relay is designed to operate standard 25 note AC chime units. With 5 amps output capability, it is capable of driving all standard AC chime units. To accommodate all existing electronics, the stop and note inputs are capable of accepting either positive or negative signals.

Dimensional:

Length: 10"

Width: 4 1/8"

Height: 1 1/4"

Mechanical:

Mounting: Four built-in stand offs are provided for screw mounting.

Connections: A terminal block is provided for DC Power and plug-on Connectors are provided for all other connections.

Electrical:

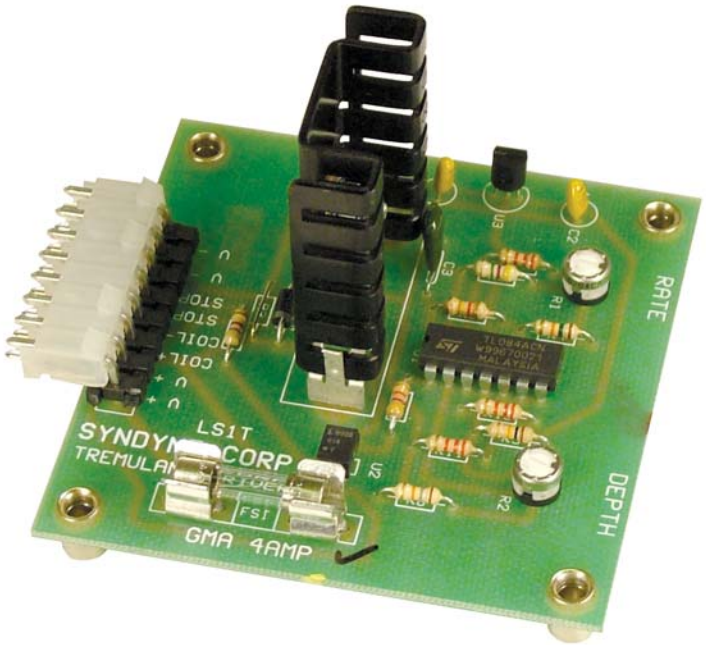
All electronics operate on standard organ rectifier power. AC Output current is supplied by the chime transformer.

Stop Input: Two terminals are provided for the stop input. One terminal is to be wired to the stop sense. The other terminal is to be wired to the opposite side of the organ rectifier. For example, if a positive signal from the stop sense is used to turn on the chimes, then connect the other stop input terminal to organ negative.

LS1T Tremulant Driver Board

FEATURES:

The LS1T tremulant driver board can be used as a stand alone unit or as part of a Syndyne keying system. Built-in controls allow accurate setting of both the tremulant rate and depth to meet the requirements of any organ. Any good quality organ rectifier will power the LS1T and it can be activated by either a negative or positive stop control.



SPECIFICATIONS:

DESIGN INTENT:

The LS1T Tremulant Driver is designed to either be used as a stand alone unit or as part of a Syndyne keying system. It is designed to control pneumatic dump valves.

DIMENSIONAL:

Length: 3"

Width: 3 1/2"

Height: 2"

MECHANICAL:

Mounting: Four built-in standoffs for screw mounting.

Connections: An 8 pin connector is provided to accommodate all connections.

ELECTRICAL:

Power Supply: Operates on standard organ rectifier power.

Fuse: A replaceable, on- board, 4 amp fuse is provided to protect the LS1T tremulant circuitry.

CAPABILITIES:

Rate Control: Tremolo rate can be adjusted from .25 cycles per second to 14 cycles per second with an on-board potentiometer labeled "Rate". Rotating the "Rate" control counterclockwise slows the tremolo rate, while rotating the control clockwise increases the rate.

Depth Control: Tremolo depth (volume) can be adjusted with an on-board potentiometer (pot) labeled "Depth". Rotating the "Depth" pot counterclockwise decreases tremolo depth, while rotating the pot clockwise increases the depth. The pot adjusts depth by varying the relationship of time the LS1T output is on to the time it is off. Minimum depth time is 4% on and 96% off when the pot is in the most counterclockwise position. Maximum depth time is 50% on and 50% off when the pot is set at the most clockwise position.

Input: Two terminals of the 8 terminal connector labeled "STOP" accept a stop input signal to control the LS1T. When a stop provides either a constant positive or a constant negative organ rectifier voltage, the output of the LS1T will be on. When no input voltage signal is present on the two "STOP" terminals, the LS1T output will be off.

Output: Two terminals labeled "COIL- and COIL+" on the 8 terminal connector directly drive tremolo magnet coils. The output can drive up to 4 amp loads.

LS24RESISTORS Expression Resistor Kit

FEATURES:

- Converts roller shoe contacts into a suitable multi-stage potentiometer control for expression inputs on the LS5600K and LS2400K keying systems.
- Kits are available from 6 to 16 stages; please specify number of stages when ordering.

SPECIFICATIONS:

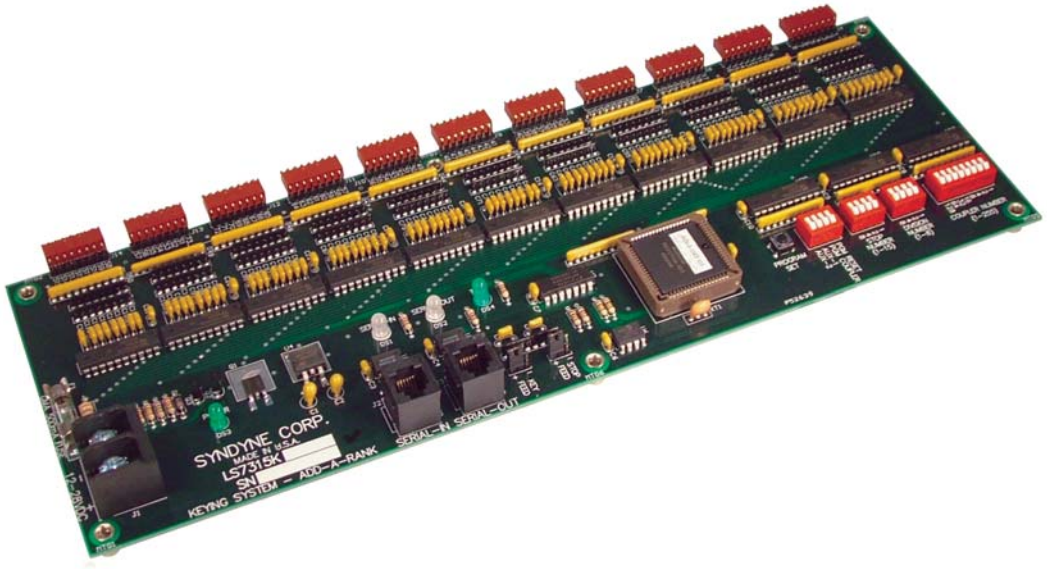
DESIGN INTENT:

The LS24RES provides a means of converting expression shoe roller contacts into a suitable potentiometer control for the Expression inputs on the LS2400K and LS5600K keying systems. Installation is easy just follow an installation drawing and solder each of the marked resistors (value and location) between the shoe contacts as shown in the LS5600K and LS2400K installation manuals.

LS7315 Single Division Keying System

FEATURES:

- Add a rank (or multiple ranks) of pipes to an existing organ without changes to any existing electronics
- Inputs for 73 notes and 15 stops
- Will accept either positive or negative signals from keyboard contacts
- Will accept either positive or negative signals from stops
- All stop inputs are easily programmable as couplers
- Transmits serial data compatible with all of our 49, 73 & 97 note driver boards
- Ideal Controller for tuning benches



SPECIFICATIONS:

System Design Intent:

In many instances it is difficult and/or costly to add a rank of pipes to an existing organ. The LS7315 Add-A-Rank board was designed for many of those applications where you want to add a unit rank to an existing instrument. The LS7315K is designed to be compatible with all existing organ controls.

Applications

1. You have an existing straight division and you want to add a trumpet to play at 16', 8' and 4'. An LS7315K is connected to the existing chest lines and an LS2473-7KP driver board is added for the new trumpet wind chest. The driver board will be programmed to play at three different pitches according to which stop input of the LS7315K is on, Unison, Octave and Fifteenth. An additional LS7315K could be added to play the same trumpet from the pedal.

2. If the swell of an existing organ consists of several straight stops with a flute unit playing at 16', 8', 4', 2-2/3' and 2', the flute unit relay can be replaced with one LS7315K board and an LS2497-7KP driver board. Additional unit stops, such as 1-1/3', 1-3/5' and 1' can be added by simply adding stop tabs. It was quite common to have the flute unit unified to the pedal with switches in the console. These switches can be left as they are, wired to the chest directly or replaced with a second LS7315K.

3. On small unit organs that have stop switching in the console at the key action it can be difficult to add ranks without replacing the whole stop switching system or tediously rewiring the stop switches. By using a row of key contacts (which are often left as spares) any number of ranks can be added with several pitches per rank using the LS7315K.

4. Small unit organs without couplers can be economically built by using LS7315K boards as the keying system.

5. It provides a great small system for a tuning bench. Stops on the bench can be set to play different pitches to allow one finger chords.

Capabilities:

Inputs: Will accept either positive or negative stop sense and note inputs. All inputs can be tied directly to existing chest junctions or console note junctions without interfering with existing controls.

Outputs: A serial data connector is compatible with all of our driver boards.

Dimensional:

Length: 13"

Width: 5"

Height: 1 1/4"

Mechanical:

Mounting: There are 6 built-in standoffs for screw mounting.

Connections: All connections via plug-in connectors on the board for ease of installation.

Electrical:

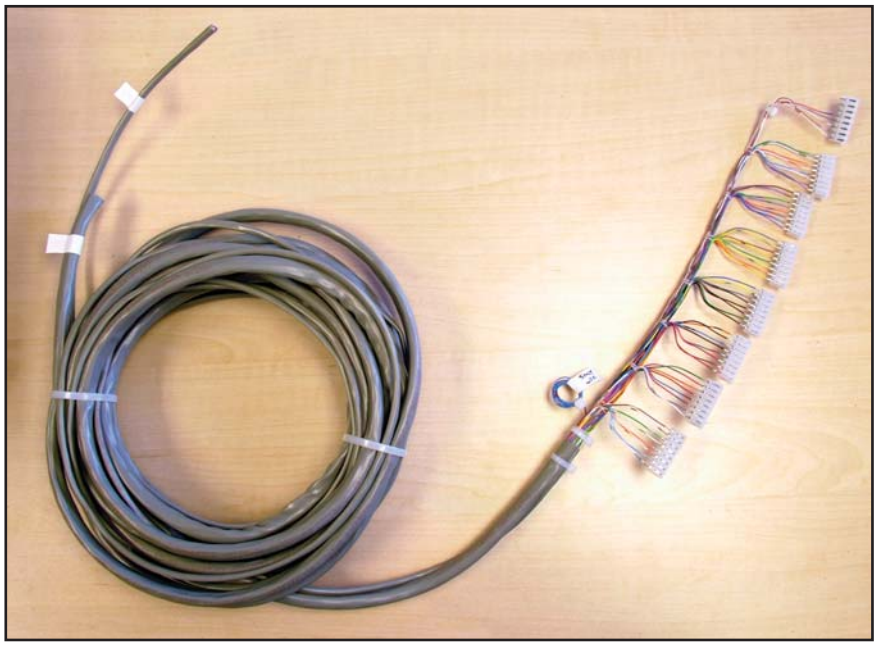
Power Supply: Operates on standard organ rectifier power 12-28VDC. Fused power supply is provided to operate on-board electronics.

Wire Harnesses Standard and Custom

FEATURES:

- Custom Harnesses
  - Made to customer specifications
  - Clearly marked pins make it easy to install
  - Well documented and easy to read wiring lists make finding specific wires quick and easy

- Standard Harnesses (Whips)
  - Available for many products
  - Well documented and easy to read wiring lists make finding specific wires quick and easy to find



SPECIFICATIONS:

DESIGN INTENT: Syndyne provides both custom and standard harnessing as a service to our customers. We only use 24 gauge (or larger) color coded wiring for high dependability and ease of service. All harnesses come with wiring lists showing the use of each wire to be connected by the customer. Whether standard or custom, our harnesses are hand laced for a professional and time honored appearance. All solder connections are covered with heat shrink material to protect against inadvertent shorting in the field and to provide excellent strain relief for the solder joint.

STANDARD HARNESSES (WHIPS): Standard harnesses (we refer to them as "Whips") are made to save our customers valuable time, especially when installing at the job site, instead of their shop. Whips are made from a bundle of color coded wires in one or more PVC jackets. One end of a Whip bundle has accurately spaced connectors that mate to one of the circuit boards we offer. The other bundle end(s) can be distributed to spreader boards or directly to equipment, such as chest magnets, stop controls, etc. Many Whips have two or more bundles to allow sending different signal types to different places. For example, a piston wire bundle will be separate from stop sense bundle in the same Whip. Whips are provided with standard bundle lengths, but other bundle lengths are made on request. Wiring lists accompany each Whip to inform the customer of the use for each wire in the Whip and where each wire should be connected. Each Whip is hand laced for professional and time honored appearance. All solder connections are covered with heat shrink material to protect against inadvertent shorting in the field and to provide excellent strain relief for the solder joint.

CUSTOM HARNESSES: Custom Harnesses are designed by our harnessing department to help our customers install our keying and combination action systems as economically as possible. With a limited amount of information from a customer as to console layout and equipment location, Syndyne will fabricate a custom console harness that will incorporate all equipment circuit boards and include wiring to connectors for stop controls and a bundle to connect to pistons. We only use 24 gauge (or larger) color coded wiring for high dependability and easy of service. All harnesses come with wiring lists showing the use of each wire to be connected by the customer. Each custom harness is hand laced for professional and time honored appearance. All solder connections are covered with heat shrink material to protect against inadvertent shorting in the field and to provide excellent strain relief for the solder joint.

This page is intentionally blank

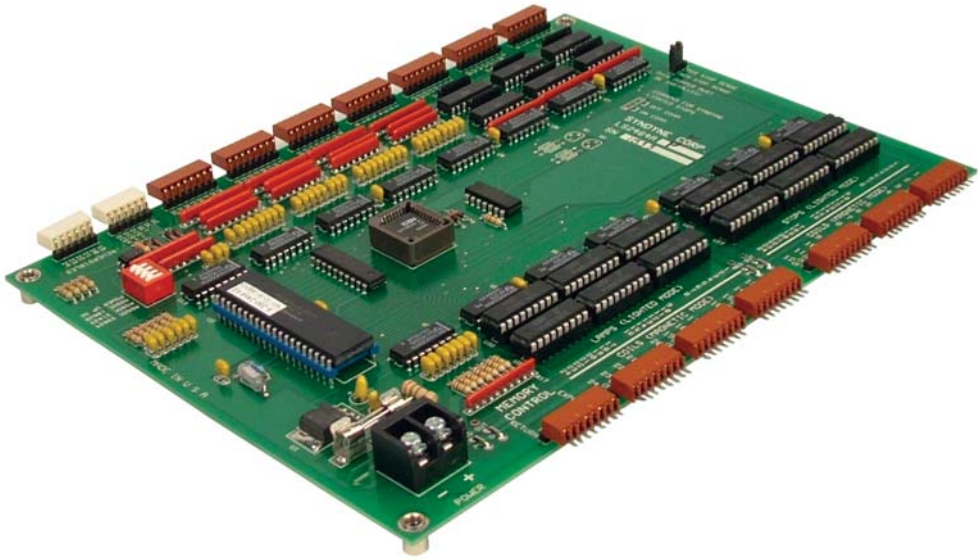
COMBINATION ACTION

LS2464 Modular Combination Action System

FEATURES:

Models for the following applications:

- Positive Stop Coil Common
- Negative Stop Coil Common
- Lighted Stop Controls
- Blind Combination Systems
- Single board option is available for small organs with three small divisions
- Up to 128 memory levels



SPECIFICATIONS:

System Design Intent:

The LS2464 system is designed as a modular combination action system for larger instruments. Each organ division will have one or more LS2464 boards to control stop mechanisms if divisional pistons are required. Select from a number of memory modules for control of memory levels. SFZ56 Sforzando Controller boards can be used in conjunction with an LS2REV board to provide programmable sforzando control.

Dimensional:

Length: 9 1/2"

Width: 8 3/4"

Height: 1"

Mechanical:

Mounting: 4 built-in stand offs for screw mounting.

Connections: All connections via plug-in connectors on the board for ease of installation.

Electrical:

Power Supply: Operates on standard organ rectifier power; On-board power supply provided to operate electronics on each board. Stop Outputs: All 24 pairs of stop coils are driven directly from the LS2464.

Stop Sense: Stop inputs will operate with either positive or negative stop sense feeds.

Programming: Provided with all functions included. No programming is necessary.

Memory: All 128 memory level settings are kept alive without external power or batteries. No maintenance of batteries is required.

Capabilities:

Stop Controls: LS2464's can drive traditional coils on stop controls with either positive or negative coil commons, illuminated stop controls, operate with non-moving stops (blind system), or drive Syndyne lighted stop controls. If you have a special requirement, call us.

Divisions: Organs with divisional pistons require at least one LS2464 board for each division; Multiple boards required if a division has more than twenty-four stops.

Stop Sense: Inputs will operate from either positive or negative stop sense commons.

Stop Polling: System monitors stops & only activates (or de-activates) stops as necessary.

Pistons: General Cancel, Divisional Cancel, Set, six reversibles and a total of 32 divisional & general piston inputs are provided for each division. Optional piston expander board is available to increase total of general and divisional piston inputs to 64 per division.

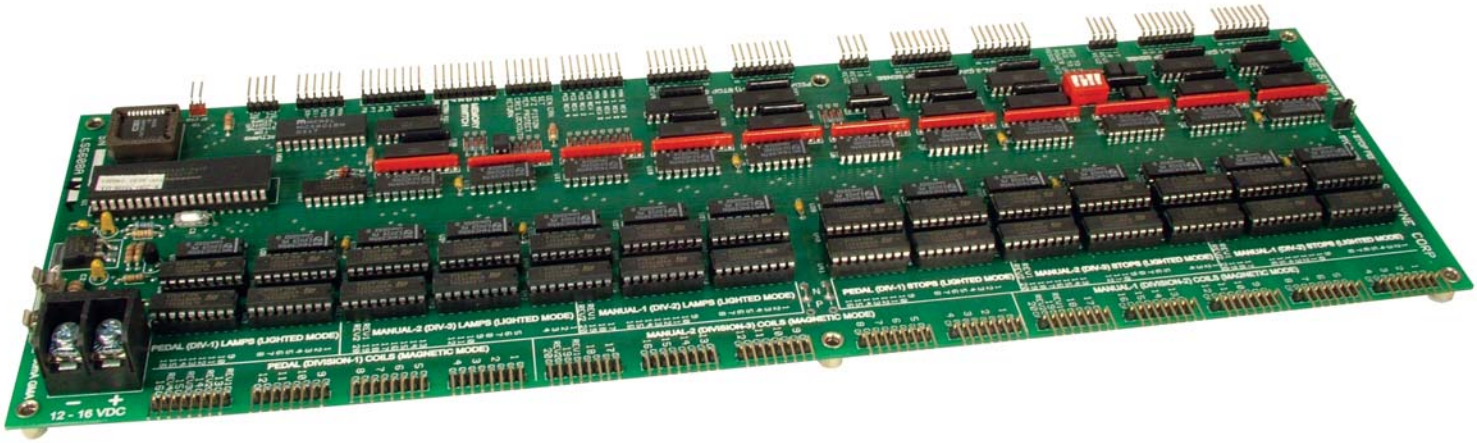
Lockouts: Inputs provided for crescendo lockout, sforzando lockout & memory protection are provided.

Memories: A total of 128 memory levels are available. Various memory controllers are available to use from 12 to 128 levels.

G.C. Start: You can select to have a general cancel to be performed each time the organ is powered up.

Reversibles: Six of the 24 stops can be used as either standard stops or as reversible stops. There is a connector with reversible piston inputs available for stop 19-24. If latch reversibles are required, an LS2REV or an LS4REV may be used.

LS5608 Single Board Combination Action System



FEATURES:

Models for the following applications:
- Positive Stop Coil Common
- Negative Stop Coil Common
- Lighted Stop Controls
- Blind Combination Systems

- Up to 32 memory levels
- Controls up to 56 Stops
- Sixteen General Piston Inputs
- Eight Divisional Piston Inputs for Each Division

SPECIFICATIONS:

System Design Intent:

The LS5608 Single Board Combination Action System was designed to offer organists the flexibility of stop presets with multiple memories on smaller instruments. It can be used with the existing organ keying system or as a companion to the Syndyne LS5600 Keying System. All standard functions for an organ are included in the single circuit board. If sforzando capabilities are needed, you can add an SFZ56 Sforzando Controller to the LS5608.

Dimensional:

Length: 16"

Width: 5 3/4"

Height: 1 1/4"

Mechanical:

Mounting: 6 built-in stand offs for screw mounting.

Connections: All connections via plug-in connectors on the board for ease of installation.

Electrical:

Power Supply: Operates on standard organ rectifier power. On board power supply provided to operate electronics.

Stop Outputs: All 56 pairs of stop coils are driven directly from LS5608.

Stop Sense: Stop Sense inputs will operate from either positive or negative stop sense connections.

Programming: Provided with all functions; No field programming is necessary.

Memory: All 32 memory level programs are maintained without external power or batteries.

Capabilities:

Divisions: Controls 3 divisions: 2 manual divisions and 1 pedal division.

Stops: 56 total stops divided into 20 stops in each of the 2 manual divisions and 16 stops in the pedal division.

Reversibles: Two stops can be reversibles in each of two manuals and four stops can be reversibles in the pedal division; Pedal reversibles can be associated in two pairs.

Pistons: General Cancel, Set, 8 reversibles, 16 generals and 3 sets of 8 divisional piston inputs are provided.

Lock Outs: Both positive and negative inputs provided for memory level protection.

Sforzando: Sforzando piston input & output provided; SFZ output is 5 volt, low current output for use with optional SFZ56 Sforzando Controller.

Memories: 32 memory levels are available; each system comes with a 12 memory level controller module as standard.

Pedal Control: You can select either or both sets of manual pistons to affect pedal stops.

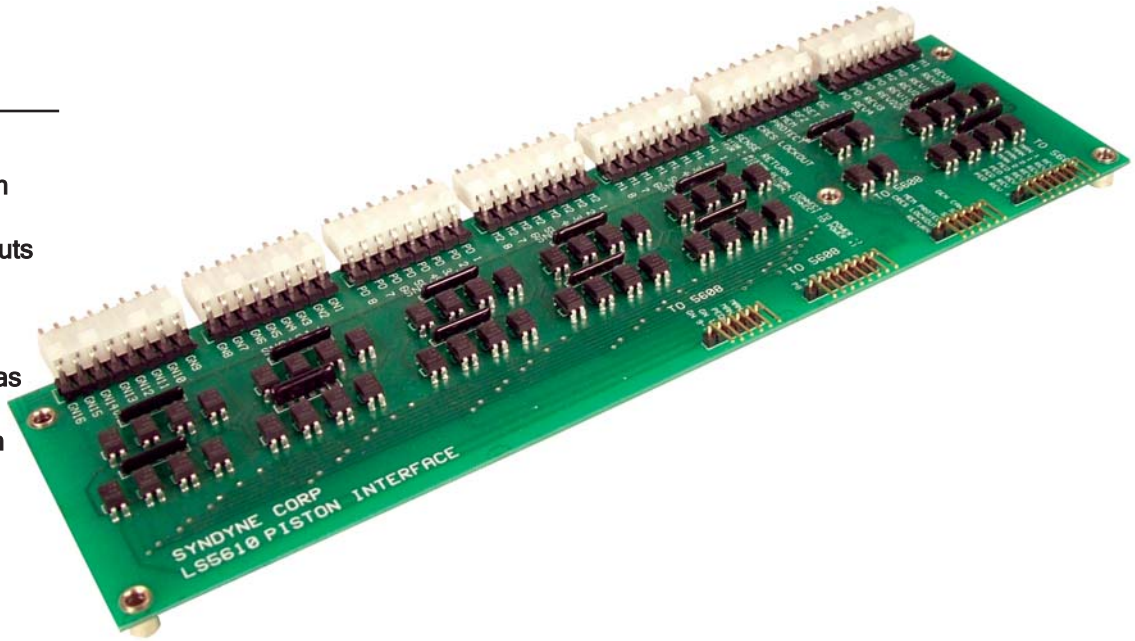
G.C. Start: You can select a general cancel to automatically be performed each time the organ is powered up.

Stop Polling: System looks at all stops & only activates or de-activates stops that require changing.

LS5610I Piston Interface Board for LS5608

FEATURES:

- Allows the use of either a negative or a positive piston feed
- Non-multiplexing piston inputs use a single piston feed to connect to standard piston wiring.
- Multiplexed piston outputs as required by the LS5608 Combination Action System



SPECIFICATIONS:

System Design Intent:

The LS5610I was designed as a companion board for the LS5608 when there is a need to retain a single piston feed or it is impractical to multiplex the divisional and general pistons. All of the LS5608 pistons can be routed through this board.

Dimensional:

Length: 10 1/2"

Width: 3 3/4"

Height: 3/4"

Mechanical:

Mounting: 5 built-in standoffs for screw mounting.

Connections: All connections via plug-in connectors on the board for ease of installation.

Electrical:

Power Supply: Operates on standard regulated organ power.

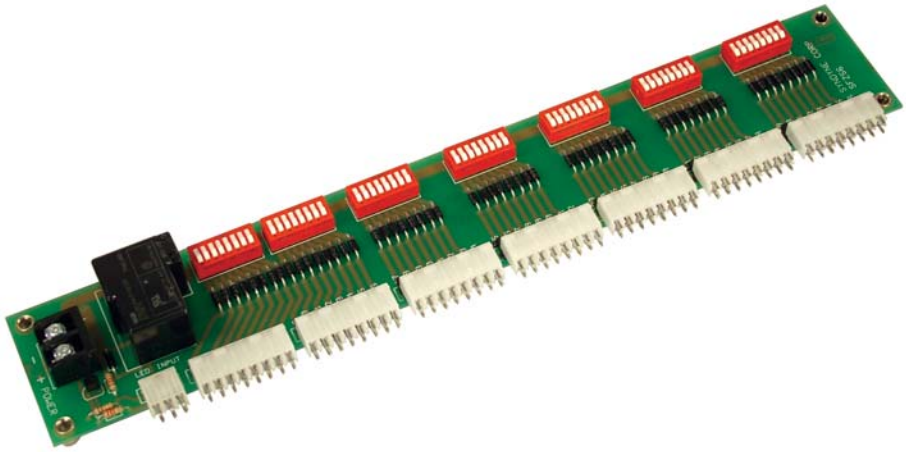
Piston Inputs: Inputs will operate from either positive or negative stop sense connections. No multiplexing of pistons required.

Piston Outputs: Exact connections to the LS5608 are provided. All multiplexing and voltage conversions are performed within the LS5610I.

SFZ56 Sforzando Controller

FEATURES:

- 56 stop outputs
- Each output is dip switch programmable on board
- Operates with active high signal (+4 to 15 Volts DC)
- Capable of supplying 25 amps continuous
- Can be used with the LS5608 or LS2464 Combination Action Systems or as a stand alone unit.
- An LS2REV can be used to drive an SFZ56 in a stand alone application



SPECIFICATIONS:

System Design Intent:

SFZ56 Sforzando Controller boards are to be used in conjunction with the LS5608 single board combination action system or as part of an LS2464 modular combination action system when a sforzando function is needed. An active high signal at the input causes a set of relay contacts to apply organ rectifier power to a heavy copper buss on the board. The copper buss distributes power to 56 diode isolated outputs. Each of the 56 outputs has a DIP switch on board, allowing the SFZ56 board to be reprogrammed easily at any time. If more than 56 outputs are needed for your sforzando function, two or more SFZ56 boards can be controlled by the same active high source.

SFZ56 controller boards can be used with other systems that provide a continuous active high (+4-15 volts DC) signal when sforzando is activated. Removing the signal will cause the SFZ56 outputs to deactivate.

Dimensional:

Length: 12"

Width: 2 1/4"

Height: 1 1/4"

Mechanical:

Mounting: 4 built-in stand offs for screw mounting.

Connections: All connections via on board plug-in connectors for ease of installation and removal.

Power Supply: The SFZ56 operates on organ rectifier power.

Outputs: 56 available outputs.

Current: 25 amperes of continuous current available to outputs.

Capabilities:

Input: An active high (+4-15 volt DC) signal on the input applies power to the output buss. When there is no active high signal on the input, power is re-moved from the output buss.

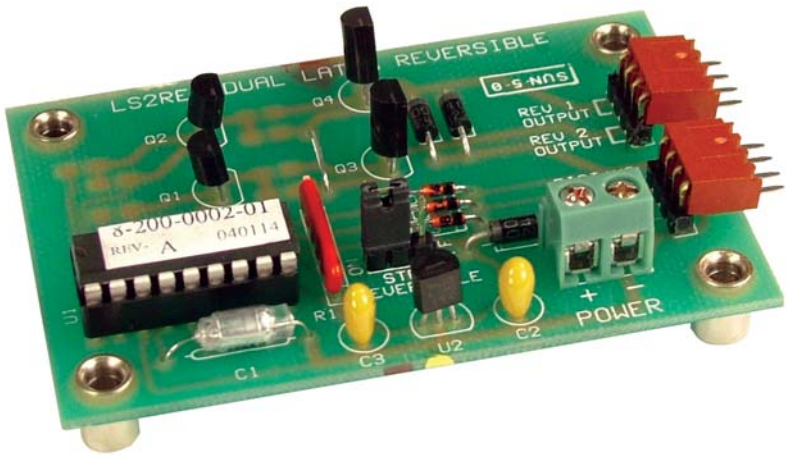
Outputs: A total of 56 diode isolated outputs.

Programming: Each output can be individually programmed to operate by switches on the board.

LS2REV Reversible Controller Board

FEATURES:

- Cancel Input
- 2 Positive Latching Outputs
- Steppable Outputs



SPECIFICATIONS:

System Design Intent:

The LS2REV reversible controllers can be added if latch reversibles are needed. SFZ56 sforzando controller boards can be controlled by one of the 2 latch outputs on an LS2REV board to provide programmable sforzando control. The LS2REV can be used by itself to control reversible circuits in an organ.

Dimensional:

Length: 2"

Width: 3 1/4"

Height: 3/4"

Mechanical:

Mounting: Four built-in standoffs for screw mounting.

Connections: All connections via plug-in connectors on the board for ease of installation.

Electrical:

Power Supply: Operates on standard organ rectifier power. On-board power supply is provided to operate electronics.

Capabilities:

Normal Operation: In normal mode each of the two piston inputs operates its respective output independently. The first time an input is momentarily shorted to negative (common) its output is energized (turned "ON"). The output remains "ON" until the piston input is momentarily shorted to negative a second time. Then the output is de-energized (turned "OFF") and stays "OFF". In normal mode either or both outputs can be on or off at the same time and are independently controlled by their respective inputs.

Step Operation: A jumper on the board can change the board outputs from normal mode to a stepped mode. In stepped mode with output 1 "ON", momentarily shorting input two to negative will turn output one "OFF" and turn output two "ON". Turning on an output will automatically turn off the other, if it is on. Both outputs can not be turned on at the same time.

Reversible Cancel: In either normal or stepped modes, momentarily shorting the terminal labeled "CANCEL" to negative will turn off both outputs. Tying this cancel terminal to the main combination action general cancel piston will turn off both outputs when the general piston is pressed. When tying cancels together, be sure the general cancel piston will supply negative to the LS2REV "CANCEL" input and not positive.

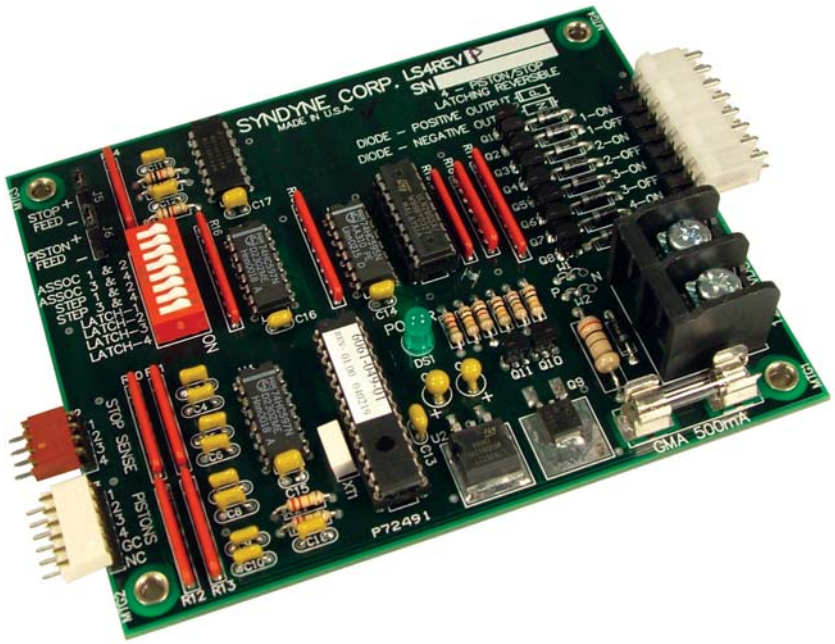
Piston Inputs: There are three piston inputs, one for each of the two reversible outputs and a cancel input. Operation of these piston inputs is covered in the above three sections.

Outputs: The LS2REV comes standard with outputs that provide positive when energized at 250 milliamps of current per output. Heavier output currents can be special ordered.

LS4REV Reversible Controller Board

FEATURES:

- 4 piston inputs and 8 corresponding outputs (2 outputs/piston)
- Each can be individually configured as either a latching piston or a reversible stop controller
- Latching pistons can be configured to Step in pairs
- Reversible stops can be configured to Associate in pairs
- Negative and/or Positive Stop Sense are selectable
- 8 discrete transistor outputs can drive up to a 1/2Amp load each, are fly-back protected and can be ordered in either Negative or Positive polarity



SPECIFICATIONS:

System Design Intent:

An excellent option for when you need a latching reversible piston or you just want to add a few reversible stops. There are 4 piston inputs and 8 corresponding outputs (2 outputs/piston) that can be individually configured as either a latching piston or a reversible stop controller. Latching pistons can be configured to Step in pairs and reversible stops can be configured to associate in pairs. Negative and/or Positive Stop Sense and piston feed are selectable. The 8 discrete transistor outputs can drive up to a 1/2Amp load each, are fly-back protected and can be ordered in either a Negative or Positive polarity.

Dimensional:

Length: 4"

Width: 5 7/8"

Height: 1 1/4"

Mechanical:

Mounting: Four built-in standoffs for screw mounting.

Connections: A large terminal block is provided to connect power to the board and plug-in connectors are provided for input and output connections.

Electrical

Power Supply: Operates on typical regulated organ power between 12-28VDC.

Capabilities

- Reversible Stop Mode: Each of the piston inputs operates its respective stop output independently. When a piston is pressed the stop is toggled to the alternate state, On to Off or Off to On. The stop outputs are momentarily pulsed for a settable duration.
- Associate Operation: This function only works on reversible stop pairs (1 & 2, 3 & 4). When enabled if both paired stops are on and one of the pair is turned off then the other stop will go off with it. For instance if Stop-1 and Stop-2 are on and piston-2 is pressed both stops will be turned off.
- Latching Reversible Mode: Each of the piston inputs operates its respective output independently. The first time a piston is pressed its corresponding outputs will be turned on. These outputs will remain latched on until the piston is pressed again at which time the corresponding outputs will be turned off.
- Step Operation: This function only works on latching pistons pairs (1 & 2, 3 & 4). When enabled only one of the stepped pistons can be on at a time. For instance if piston-1 is on and piston-2 is pressed the outputs for piston-1 will turn off and the outputs for piston-2 will turn on.
- General Cancel: When this piston (GC) is pressed all latched outputs and stops that are on will be turned off.
- Output Pulse Time: The output pulse time is settable from 0.1Sec to 0.6Sec. in 0.05Sec increments. Hold down the GC piston and apply power to the organ to enter this mode. To exit this mode turn off the organ, wait until power has fully decayed (approximately 1 minute), and turn the organ back on; normal operation will resume. Once entering the Pulse Time Set mode the stop outputs will toggle On/Off with every piston push. Every time the GC piston is pressed the pulse time will increment by 0.05Sec.. Once the desired pulse time has been achieved simply exit this mode by turning off the organ for 1 minute the pulse time will automatically be remembered.

LS12MS Rotary Memory Level Controllers

FEATURES:

- One of a family of memory control modules to be used with Syndyne Combination Actions
- Comes standard with black knob and engraved brass plate
- White, Black and several other colored engraved plates are available as special order.

SPECIFICATIONS:

System Design Intent:

You may select from a number of memory modules for front panel control of memory levels. The LS12MS is one of these memory modules.

Circuit Board Dimensional:

Height: 2 3/4"

Width: 2 3/4"

Depth: 1/2" behind a 3/4" name board.

Engraved Plate Dimensional:

Height: 2"

Width: 1 3/4"

Depth: The knob sticks out approximately 3/4" in front of the engraved plate.

Mechanical:

Mounting: The circuit board is mounted to the organ with four screws into the back of the name (stop) board. An engraved plate mounts to the front of the name (stop) board with four small brass screws.

Connections: Connects to the combination action system by means of a plug-in connector for ease of installation.

Front Plate: Brass, white, black, and several other colors of engraved plates are available.

Electrical:

Power Supply: Receives power from the combination action system

Programming: No programming necessary

Capabilities:

Memories: There are twelve positions available on the front panel rotary switch. If you need to limit the number of memory levels to less than twelve, a stop in the switch can be rotated to a different position and a custom engraved plate can be provided.

LS64MS Rotary Memory Level Controllers

FEATURES:

- One of a family of memory control modules to be used with the LS2464 Combination Actions
- Includes knobs and engraved brass plate
- White, Black and several other colored engraved plates are available as special order

SPECIFICATIONS:

System Design Intent:

The LS2464 Combination Action system is designed as a modular system. You may select from a number of memory modules for front panel control of memory levels. The LS64MS is one of these memory modules.

Circuit Board Dimensional:

Height: 2 3/4"

Width: 5 3/4"

Depth: 1/2" behind a 3/4" name board.

Engraved Plate Dimensional:

Height: 2"

Width: 4 7/16"

Depth: The knobs stick out approximately 3/4" in front of the engraved plate.

Mechanical:

Mounting: The two circuit boards are mounted to the organ with eight screws into the back of the name (stop) board. The engraved plate mounts to the front of the name (stop) board with four small brass screws.

Connections: Connects to the combination action system by means of plug-in connectors for ease of installation.

Front Plate: Brass, white, black and several other colors of engraved plates are available.

Electrical:

Power Supply: Receives power from the combination action system.

Programming: No programming is necessary.

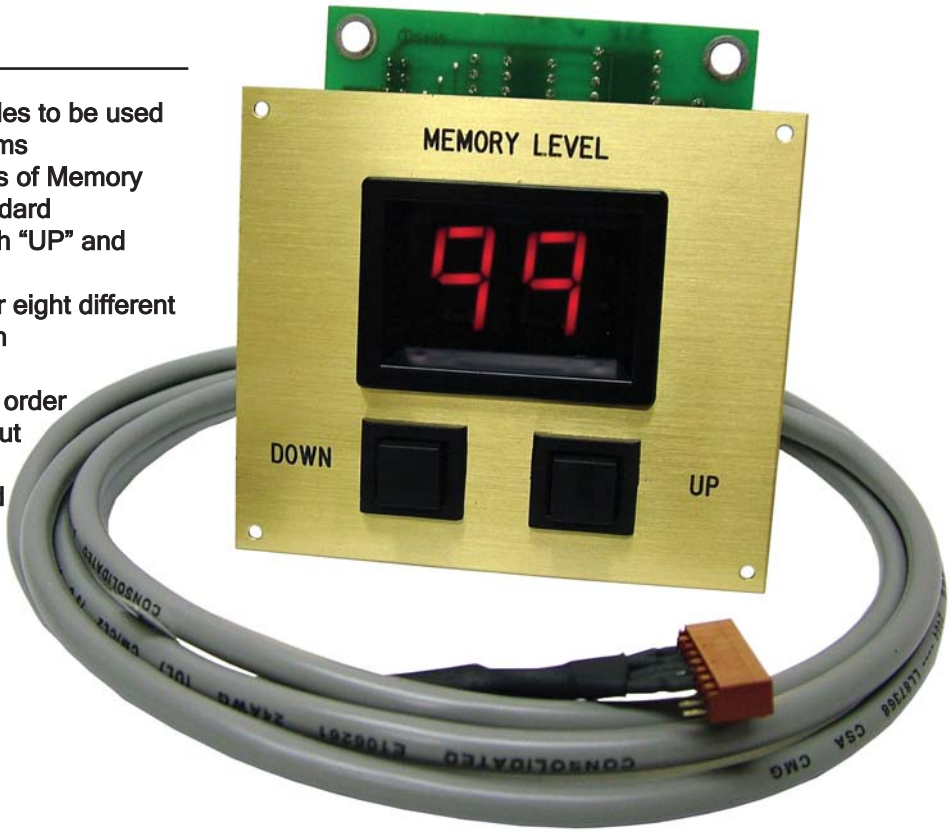
Capabilities:

Memories: There are 64 positions available on two front panel rotary switches. If you need to limit the number of memory levels to less than 64, a stop in either switch can be rotated to a different position and a special engraved plate can be ordered.

LSEMS Electronic Memory Level Controllers

FEATURES:

- One of a family of memory control modules to be used with Syndyne Combination Action Systems
- Available with 8, 32, 64, 99, or128 Levels of Memory
- Large LED readout in brass plate is standard
- Quickly scroll through memory levels with “UP” and “DOWN” push buttons
- Accepts from one to five key switches for eight different configurations of memory level protection
- White, Black and several other colored, engraved plates are available as special order
- LSEMS controllers can be ordered without a plate so only the display is mounted in the name board and pistons can be used in place of the standard up and down buttons



SPECIFICATIONS:

Design Intent:

You may select from a number of memory modules for front panel control of memory levels. The LS64EMS is one of these memory modules.

Circuit Board Dimensional:

Height: 3 1/4"

Width: 3 1/4"

Depth: 1/2” behind name board.

Engraved Plate Dimensional:

Height: 3"

Width: 3 1/2"

Depth: The switches protrude approximately 1/4" in front of the engraved plate.

Mechanical:

Mounting: The LSEMS nameplate is mounted to the organ with four small brass screws. Alternate mounting allows only the display bezel to show in the name board (or music rack) with pistons used for up and down scrolling.

Connections: Connects to the combination action system and the memory protection key switches by means of plug-in connectors for ease of installation.

Front Plate: Brass, with black lettering

Electrical:

Power Supply: Receives power from the combination action system.

Programming: No programming is necessary.

Capabilities:

Memories: There are 8, 32, 64, 99, or 128 positions available by scrolling up or down with two push button switches on the front panel. Pressing both buttons at the same time resets the memory level to 1. Holding either button scrolls through the memories with an accelerating jog speed

LED Readout: Two each; seven segment LED’s display currently active memory level. LED’s are .4” tall and very easy to read.

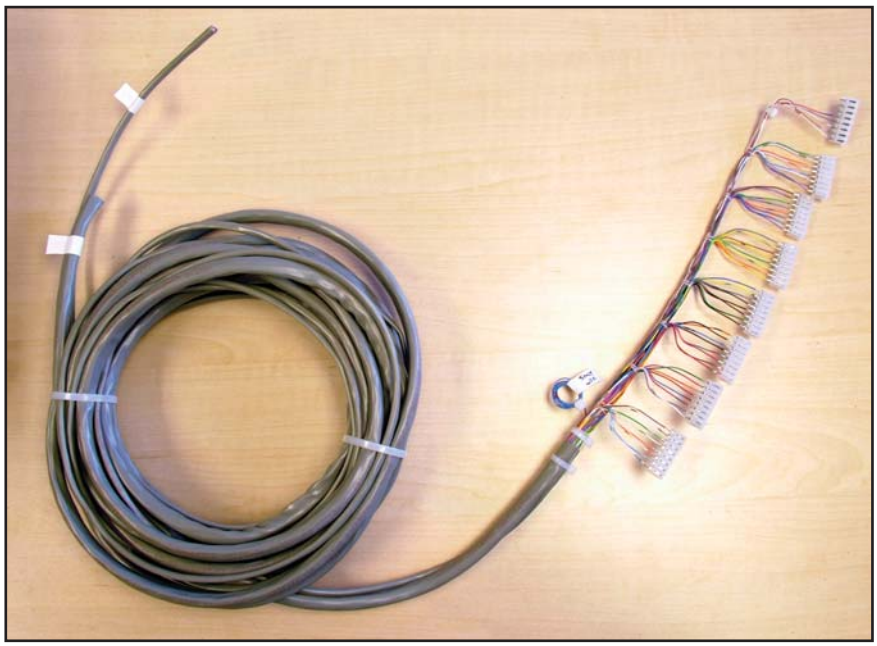
Memory Lockout: There are 8 different configurations of memory lockout protection available. You can select between 8 configuration choices by placing small jumpers (included) over pins on the board.

Wire Harnesses Standard and Custom

FEATURES:

- Custom Harnesses
  - Made to customer specifications
  - Clearly marked pins make it easy to install
  - Well documented and easy to read wiring lists make finding specific wires quick and easy

- Standard Harnesses (Whips)
  - Available for many products
  - Well documented and easy to read wiring lists make finding specific wires quick and easy to find



SPECIFICATIONS:

DESIGN INTENT: Syndyne provides both custom and standard harnessing as a service to our customers. We only use 24 gauge (or larger) color coded wiring for high dependability and easy of service. All harnesses come with wiring lists showing the use of each wire to be connected by the customer. Whether standard or custom, our harnesses are hand laced for a professional and time honored appearance. All solder connections are covered with heat shrink material to protect against inadvertent shorting in the field and to provide excellent strain relief for the solder joint.

STANDARD HARNESSES (WHIPS): Standard harnesses (we refer to them as "Whips") are made to save our customers valuable time, especially when installing at the job site, instead of their shop. Whips are made from a bundle of color coded wires in one or more PVC jackets. One end of a Whip bundle has accurately spaced connectors that mate to one of the circuit boards we offer. The other bundle end(s) can be distributed to spreader boards or directly to equipment, such as chest magnets, stop controls, etc. Many Whips have two or more bundles to allow sending different signal types to different places. For example, a piston wire bundle will be separate from stop sense bundle in the same Whip. Whips are provided with standard bundle lengths, but other bundle lengths are made on request. Wiring lists accompany each Whip to inform the customer of the use for each wire in the Whip and where each wire should be connected. Each Whip is hand laced for professional and time honored appearance. All solder connections are covered with heat shrink material to protect against inadvertent shorting in the field and to provide excellent strain relief for the solder joint.

CUSTOM HARNESSES: Custom Harnesses are designed by our harnessing department to help our customers install our keying and combination action systems as economically as possible. With a limited amount of information from a customer as to console layout and equipment location, Syndyne will fabricate a custom console harness that will incorporate all equipment circuit boards and include wiring to connectors for stop controls and a bundle to connect to pistons. We only use 24 gauge (or larger) color coded wiring for high dependability and easy of service. All harnesses come with wiring lists showing the use of each wire to be connected by the customer. Each custom harness is hand laced for professional and time honored appearance. All solder connections are covered with heat shrink material to protect against inadvertent shorting in the field and to provide excellent strain relief for the solder joint.

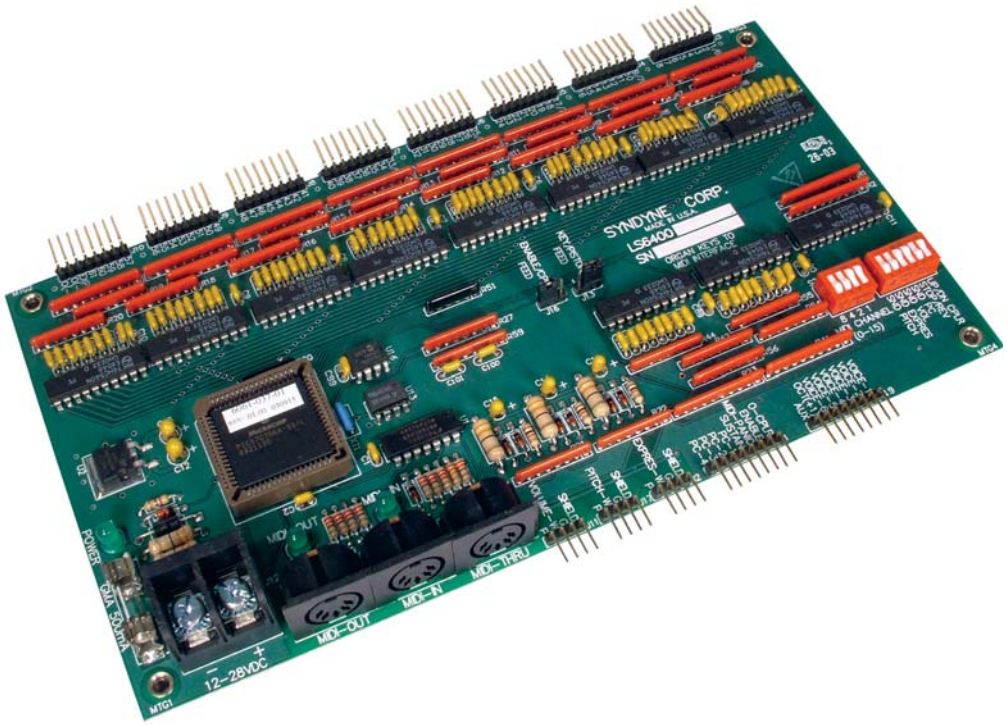
This page is intentionally blank

MIDI Accessories

LS6400 Pipe Organ To MIDI

FEATURES:

- Easy to install in an existing organ
- Allows playing general MIDI sounds from any standard MIDI sound module
- Change from one MIDI sound to another by using organ keys
- Play different MIDI sounds from different keyboards at the same time (requires one LS6400 per keyboard)
- Assignable to all 16 MIDI channels
- Built-in MIDI Merge
- MIDI-In, MIDI-Out, and MIDI Thru
- 6 Settable Reversible Pistons
- +1,-1, and -2 Octave Transposing
- MIDI Sustain
- MIDI Volume, Expression, and Pitch Inputs



Sound Module Interface

SPECIFICATIONS:

System Design Intent:

The LS6400 is a simple, low cost device for adding general MIDI voices from a MIDI sound module to an existing organ. While designed specifically for pipe organs, it can also be used with other electronic instruments. The inputs on an LS6400 Interface are connected to key contacts on a manual or pedal board. These inputs can be directly wired to the keyboard or pedal board contacts or wired at the console junction board. The LS6400 inputs are well buffered so they can be wired to the existing contacts along with other organ electronics. No separate contacts are needed. The LS6400 will accept either positive or negative input signals and will operate directly from the organ rectifier (12 to 28 volts DC).

When MIDI is desired for more than one division, an LS6400 should be connected to each division where MIDI is required. For instruments with more than one LS6400, "chain" LS6400 interface modules by connecting the output from one module into the input of the next. The last LS6400 module in the chain would then have its output connected to the sound module (synthesizer).

Changing MIDI sounds from the organ is accomplished by holding a "PC" piston, then pressing the appropriate note on the keyboard. Each note on the keyboard has been assigned to a particular General MIDI sound (i.e., piano, strings, harp etc.) on your MIDI sound module. There are several assignment options so you can set any of the 128 General MIDI sounds from either manual or pedal keys.

Dimensional:

Length: 9"

Width: 5 3/4" including connectors

Height: 1.1"

Mechanical:

Mounting: Four built-in standoffs for screw mounting.

Connections: All wires are connected via removable connectors on the board for easy installation.

Electrical:

Power Supply: Operates on standard organ rectifier power. On-board power supply is provided to operate electronics.

Programming: Provided with all functions included. No programming is necessary. All options are selected by DIP switches.

Inputs:

Enable Input: Allows operation from either a stop or a reversible piston.

Select Input: Four inputs are provided to select different sets of sounds by pressing the appropriate key.

Pitch Input: Allows tuning a sound module to the pitch of the organ.

Expression Input: Provides expression for the MIDI sound module. The LS6400 can be controlled by an organ expression pedal potentiometer.

Volume Input: Input to control volume of MIDI sounds.

Octave Coupler Input: Provides an octave coupler for MIDI sounds.

MIDI In Connector: Accepts MIDI information from other LS6400 boards and MIDI devices. That MIDI data will be merged with note information from the inputs on board and passed out of the MIDI Out Connector.

MIDI Out Connector: All MIDI data coming in the MIDI In Connector is merged with MIDI data collected from the inputs and sent out this connector.

MIDI Thru Connector: Passes through all "MIDI In" Messages

DIP SWITCHES:

MIDI Channel: Allows selection of MIDI channels 1-16.

UP/DN Coupler: Selects whether coupler shifts keying up or down on octave.

Stop/Rev: Selects whether the enable input reacts to a stop input (continuous)or a reversible input (momentary).

Send PC: A program change number is assigned to each note input so MIDI sounds can be changed by using keys on the organ keyboard in the set mode. Those numbers will be sent out or not sent out the MIDI Out Connector when a note is depressed, depending on the position of this switch.

Send Volume: This switch determines whether any MIDI volume changes go out the MIDI Out Connector.

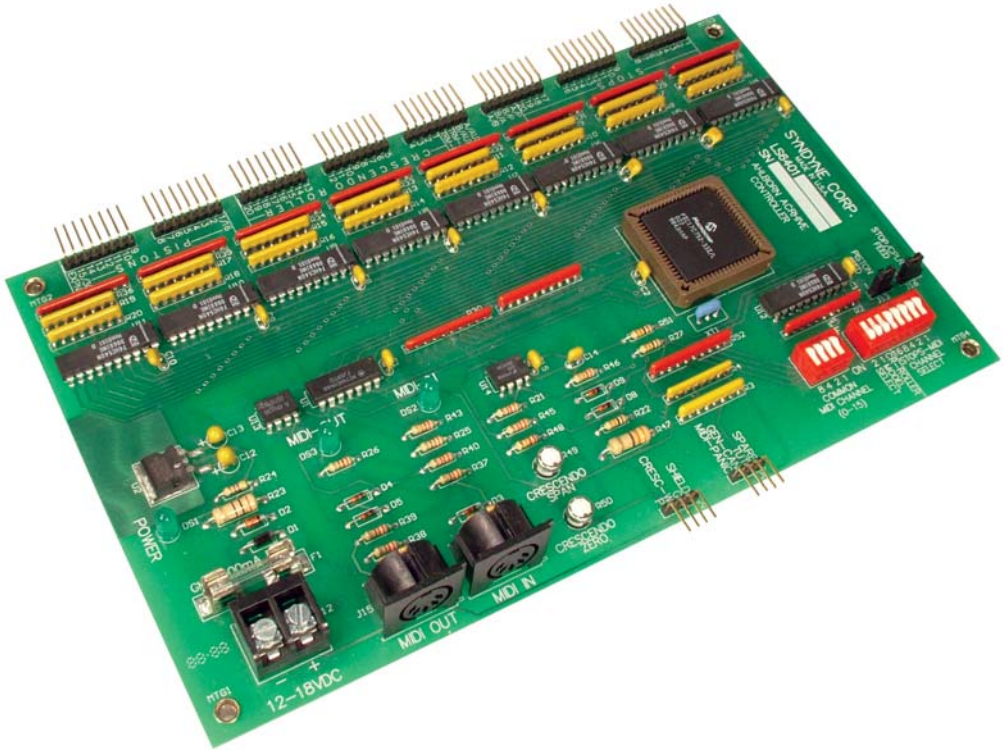
Send Expression: This switch determines whether any MIDI expression changes go out the MIDI Out Connector.

Send Pitch: This switch determines whether any MIDI Pitch changes go out the MIDI Out Connector.

LS6401 Pipe Organ To Ahlborn

FEATURES:

- LS6401 will control any of the four available Ahlborn Archive Modules.
- Set MIDI channel of each division to match your Ahlborn unit.
- Includes inputs for stops, pistons, couplers, general cancel, crescendo, tutti and MIDI panic features available on Archive Modules.
- Crescendo input will accept either roller contacts or potentiometer control.
- Acts as MIDI merge for incoming MIDI signals.
- Operates in conjunction with our LS6400 if MIDI keying signals are needed from the organ.



Sound Module Interface

SPECIFICATIONS:

System Design Intent:

The LS6401 is designed to control Ahlborn Archive Modules with traditional pipe organ controls from the organ bench. Although designed to be used with pipe organs, its inputs can be used with an independent control box. Stop and coupler inputs can be set for either positive or negative signals and piston inputs can also be set for positive or negative signals. The LS6401 will operate directly from the organ rectifier (12 to 16 volts DC).

One LS6401 controller is required for each Archive Module. For instruments where you want to incorporate stops from more than one Archive Module, simply split the MIDI Keying to each LS6401. Each controller includes a MIDI merger, so MIDI data on all 16 channels entering the MIDI in connector is merged with any MIDI signals generated on the board. The merged signals are sent out the MIDI out connector. Each Archive Module in an instrument must have each of its divisions set to a unique MIDI channel. The LS6401 controlling a module is settable to the same MIDI channels as the module it controls.

Dimensional:

Length: 9"

Width: 6 1/2" including connectors

Height: 1.1"

Mechanical:

Mounting: Four built-in standoffs for screw mounting.

Connections: All wires are connected via removable connectors on the board for easy installation.

Electrical:

Power Supply: Operates on standard organ rectifier power. On-board power supply is provided to operate electronics.

Programming: Provided with all functions included. No programming is necessary. All options are selected by DIP switches.

Inputs:

Crescendo Pot Input: A four terminal input is provided to accept the signal from a 5K or 10K potentiometer. Two adjustments associated with this input allow you to set minimum and maximum levels in case the potentiometer does not travel to either end of its range.

Crescendo Roller Inputs: Input terminals to access 20 levels of crescendo, available on Archive Modules, are provided.

Piston Inputs: Input terminals for 30 general pistons, 6 coupler pistons, 2 tremulant pistons, a general cancel piston, a tutti piston, and a MIDI panic piston are provided.

Stop Inputs: Input terminals for the 20 available stops on the Archive Module are provided.

MIDI In Connector: Accepts MIDI information from other LS6401 boards and MIDI devices. That MIDI data will be merged with information from the inputs on board and passed out of the MIDI Out Connector. Data on all 16 MIDI channels is merged.

MIDI Out Connector: All MIDI data entering the MIDI In Connector is merged with MIDI data generated on board and sent out this connector.

DIP SWITCHES:

Stops-MIDI Channel Select: Assigns each division of the Archive Module to a separate MIDI channel. Various channel combinations can be selected from a list that is provided.

Crescendo Roller: Toggles between potentiometer or roller type inputs to operate the Archive crescendo.

Model Select: Selects which model of Archive Module the LS6401 will control.

Common MIDI channel: Selects on which MIDI channel the common channel of the Archive Module will transmit.

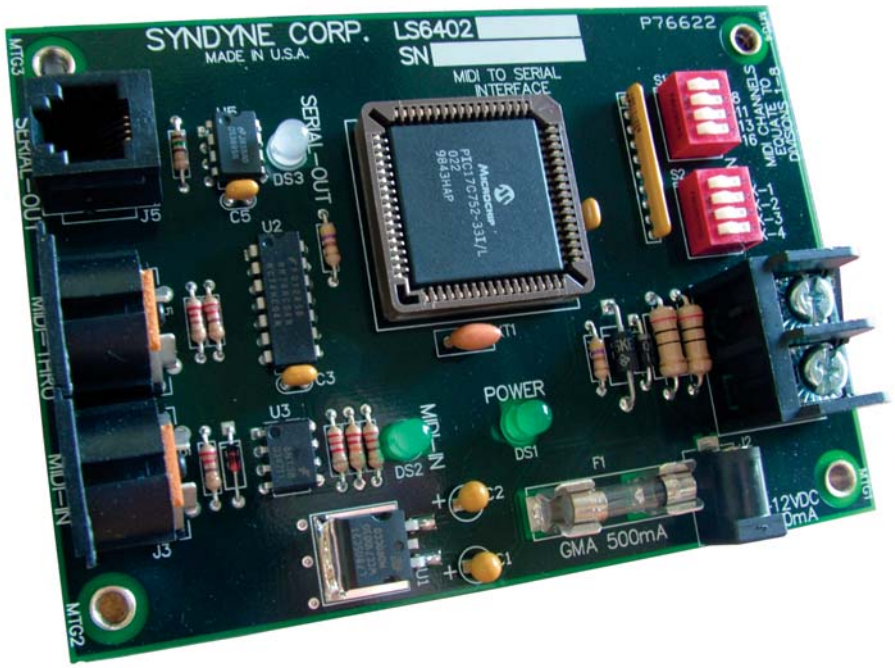
Jumpers: Moving a jumper block will cause all stop, crescendo and coupler input signals to accept either positive or negative feed. Moving a jumper block will cause all piston input signals to accept either positive or negative feed.

Fuse: A replaceable 500 milliamp (½ amp) fuse is provided to protect circuitry on the LS6401.

LS6402 MIDI to Syndyne Serial Data Interface

FEATURES:

The LS6402 board receives General MIDI messages and converts them into divisional keying messages for use with Syndyne keying system pipe, stop and chime driver boards.



SPECIFICATIONS:

DIMENSIONAL:

Length: 5"

Width: 3 1/2" including connectors

Height: 1 1/4"

MECHANICAL

Mounting: Four built-in standoffs for screw mounting.

Connections: A large terminal block is available for connections to organ power or a 2.1mm plug for a 9-12VDC power pack. Standard MIDI and RJ11 (serial data) connectors are provided for input and output connections.

ELECTRICAL

Power Supply: Operates on typical regulated organ power between 12-24VDC or a DC power pack between 9 &12VDC.

STOP CONTROLS

LDK Lighted Draw Knob

FEATURES:

- Silent Operation
- Knob illuminates when the stop is on
- No Coils to draw high current: Requires less than 0.1 ampere to operate lamp
- Lightweight, compact design to facilitate tighter switch placement
- Easy to install
- Enclosed construction for dust protection
- Rugged and dependable
- JMP5 pure gold contacts for maximum reliability
- Traditional operation: Pull knob to turn on and push knob to turn off
- Plug in lamp for ease of replacement
- Elegant feel

SPECIFICATIONS:

DIMENSIONAL:

Length: 3.00" from back of mounting board to end of terminals.

Body Diameter: 1.2"

Flange Diameter: 1.75"

Mounting Holes: .875" center hole with three each .136" screw holes equally spaced on a 1.500" circle.

MECHANICAL:

Travel: .300" from center position to the on and off positions.

Toggle Force: 15 ounces

Life: 250,000 cycles minimum

LAMP:

Type: ANSI #1705 AS15.

Brightness: .5 mean spherical candle power. (MSCP)

Current: .080 amps.

Voltage: 14 volts maximum 11.5 volts recommended.

Life: 2,000 hours at 14 volts 22,000 hours at 11.5 volts.

Note: The ANSI #1705 lamp was selected to be operated at 11.5 volts. This lower voltage protects against internal heat build-up and lengthens the lamp life 1100%.

ELECTRICAL:

Contact Type: Momentary contacts.

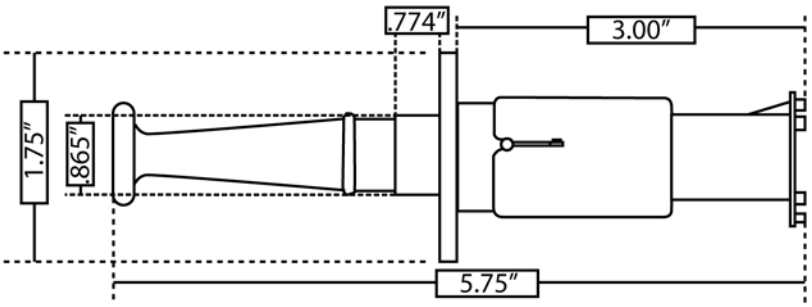
Contact Material: JMP5 contact material–pure gold clad over MDA-220 base material.

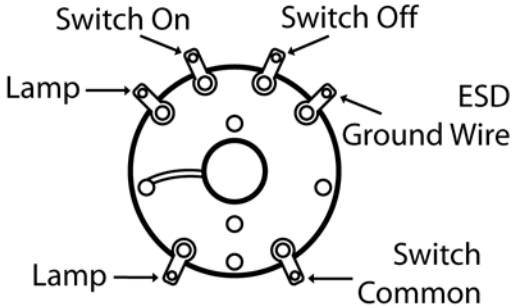
Contact Resistance: .1 ohm maximum after 25,000 operations with no load.

Contact Current: 1 amp maximum. (resistive)

Contact Voltage: 50 volts maximum.

Terminations: Individual terminals provided for solder connections.



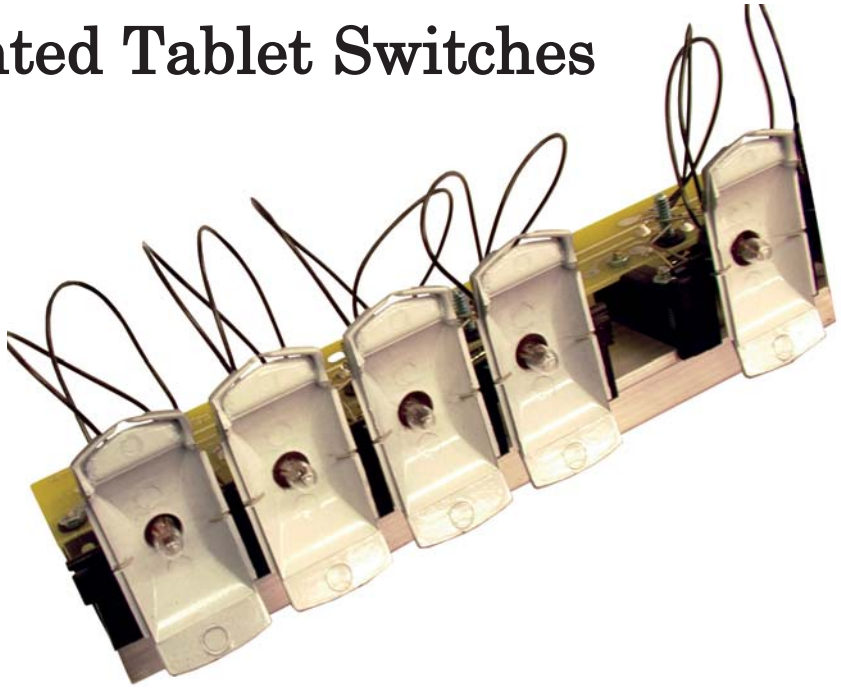


Drawings are a representation only

LTS Lighted Tablet Switches

FEATURES:

- Silent Operation
- Tablet illuminated when stop is on
- No Coils to draw high currents–Requires less than 0.1 ampere per stop
- Easy to install as a single assembly for all stops
- Rugged, dependable
- Traditional operation–Push top of tablet to turn off and bottom of tablet to turn on or reverse operation to simulate tilting tablets
- Assemblies made to any length and configuration



SPECIFICATIONS:

DIMENSIONAL:

Tablet Width: .9" wide

Tablet Height: 2.0" high

Switch Spacing: Switches are mounted at 1.0" horizontal spacing.

Depth: 2.7" overall depth; 1.5" from mounting board to back of the assembly.

Mounting: Switch assemblies are mounted on a continuous aluminum rail. Mounting holes are provided in the rail to mount all assemblies at once.

MECHANICAL:

Travel: .125" travel from center position to either the on or off position when pressed at top or bottom edge of tablet

Key Leveling: Slotted shaft provided for screw adjust leveling

Life: 250,000 operations

LAMP:

Type: ANSI #1705 AS15.

Brightness: .5 mean spherical candle power. (MSCP)

Current: .080 amps.

Voltage: 14 volts maximum. 11.5 volts recommended.

Life: 2,000 hours at 14 volts. 22,000 hours at 11.5 volts.

Note: The ANSI #1705 lamp was selected to be operated at 11.5 volts. This lower voltage prohibits internal heat build-up and lengthens lamp life by 1100%.

ELECTRICAL:

Contact Type: Momentary contacts.

Contact Material: JMP5 contact material–Pure gold clad over MDA 220 base material.

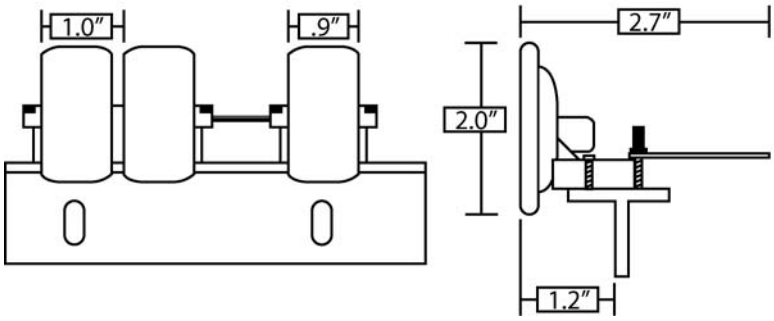
Contact Resistance: 0.1 ohm maximum after 25,000 operations with no load.

Contact Current: 1 amp maximum. (resistive)

Contact Voltage: 50 volts maximum.

Terminations: Individual solder pads provided for solder connections. Wiring harnesses are available.

LTS Rocker Tablets
Available in White and Off White

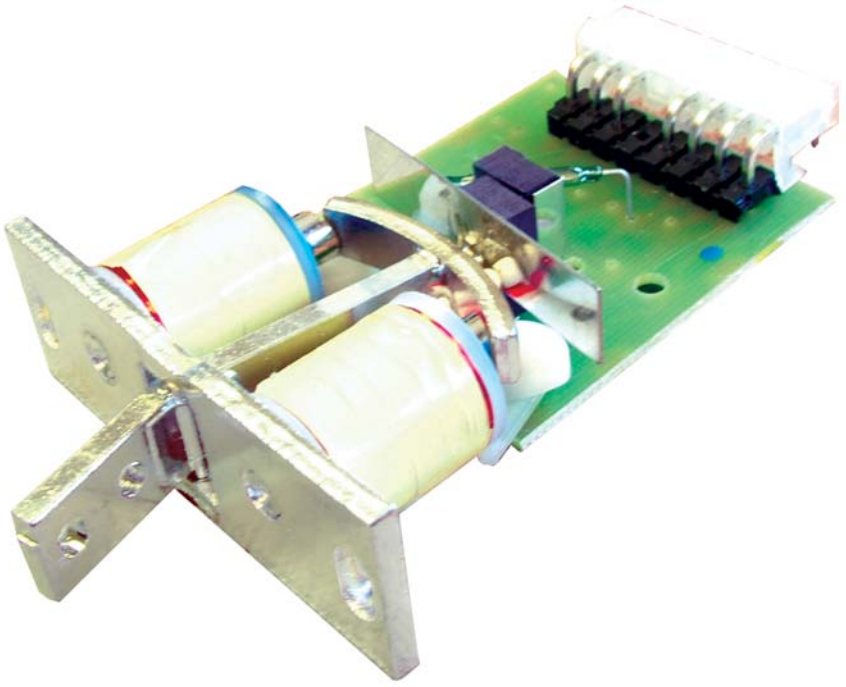


Overall length of assembly equals the number of switches and spaces x 1″ + ½″
for ends of rail outside of end switches

SAM Stop Action Magnet

FEATURES:

- Printed circuit board for mounting diodes, resistors & reed switches
- Positive or Negative Coil common. Specify when ordering.
- Patented cam adjustment for fast, permanent key leveling
- Accepts standard key tablets
- Unique, noise-free bearing design
- Magnetic toggling to eliminate sticking, while offering a smooth, quiet action
- Hermetically sealed reed switch, unaffected by dust or corrosion
- Available with one reed N.O. or N.C. or with two reeds. Specify when ordering
- Compact size and weight allowing tighter switch placement
- 28 ohm coils, which operate on 9.5 to 15 volts. Nonstandard coil specifications available
- Proven design since 1972 in over 500,000 units
- Specify either a Plug on Connector or solder directly to PC Board
- Available in 0,10,15, or 22 degree lever angles, Specify when ordering



SPECIFICATIONS:

DIMENSIONAL:

Height: 2.420"

Width: .830"

Depths: 2.450"

MOUNTING

Mounting Hole Dimension:

(Sized and designed for a #6 screw)

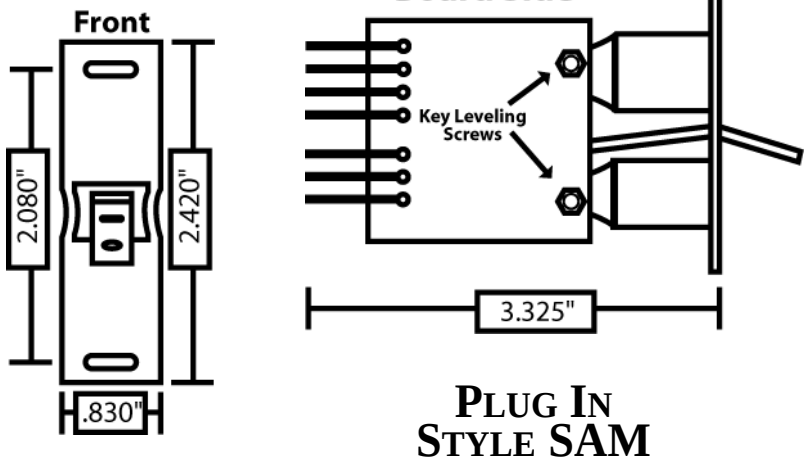
center to center: 2.080"

Key Leveling Adjustment: ¼' hex head

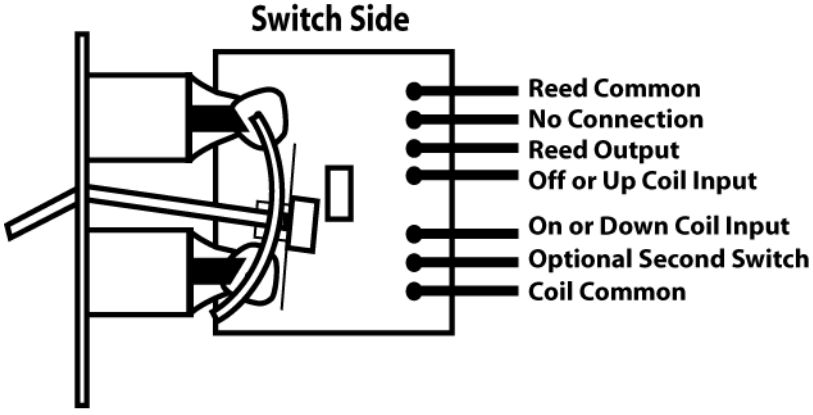
MECHANICAL:

Toggle Force: Minimum of 35 inch-grams measured at end of lever for standard toggle. Stronger toggle units available upon request.

(Continued on Next Page)



PLUG IN STYLE SAM



Lever Angle: Straight angle switches toggle from 5° above (Off) to 5° below (On) horizontal position. 10°, 15° & 22° angle switches are measured in the up (Off) position using horizontal (0°) as the reference point.

Toggle Arc: 9° angle from stop to stop when adjustment cams are in mid position.

Key Leveling Range: Cams will adjust each stop ± 2° for tablet leveling.

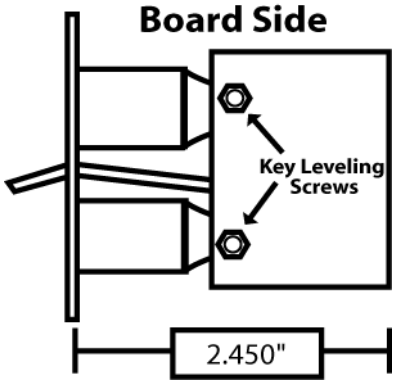
Life: 200,000 cycles minimum. Production quality control requires 500,000 cycle minimum in random sample testing.

ELECTRICAL:

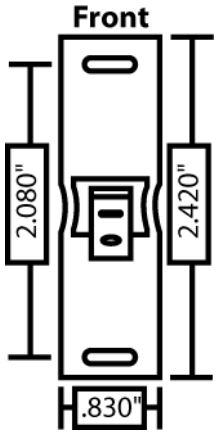
Operating Voltage: 14 volts D.C.; will operate from 9 volts to 15 volts continuous. Other coil voltages are available.

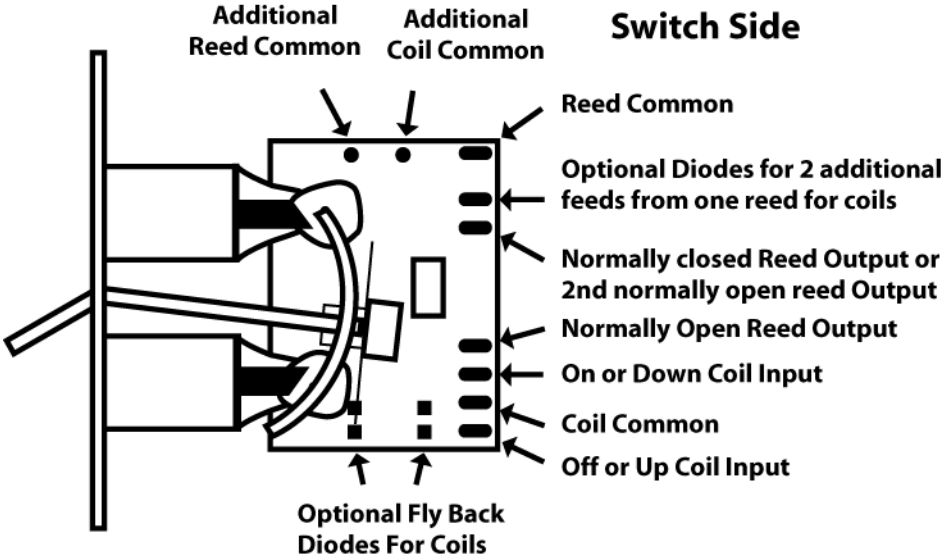
Reed Switch: 0.55 amp maximum switching current. 200 volts RMS minimum breakdown voltage; .100 ohms maximum initial contact resistance; .750 millisecond operating time including bounce. Reed switch must be protected from fly back voltage if directly operating an inductive load.

Circuit Board: (Either plug-in or solder pad type PC boards.) Provision to diode isolate two signals from one reed switch. Accepts two reeds maximum; both closing in down position or one closing in either position. Separate holes for bussing reed switch and coil commons. Hole to accept wire tie to strain relief wire loom.



DIRECT SOLDER STYLE SAM





SAM Stop Action Magnet Tablets

Rocker Tablets

Available in Stock Colors White and Off White

Theater Tablets

Available in Stock Colors White, Ivory, Black, and Red

Notched Classical Tablets

Available in Stock Colors White, Ivory, Black, and Red

Round Classical Tablets

Available in Stock Colors White, Black, Red

Many other Colors and Tab Styles are available. Call for availablility and lead times.

MSA Manual Stop Action

Same as the SAM Stop Action Magnet Only Without the Coils

FEATURES:

- Printed circuit board for mounting diodes, resistors & reed switches.
- Patented cam adjustment for fast, permanent key leveling.
- Accepts standard key tablets.
- Unique, noise-free bearing design.
- Magnetic toggling to eliminate sticking while offering a smooth, quiet action.
- Hermetically sealed reed switch unaffected by dust or corrosion.
- Available with one reed N/O or N/C or two reeds.
- Compact size and weight allowing tighter switch placement.
- Available with either pads for soldering connections on the P.C. board or a P.C. board a header connector.

SPECIFICATIONS:

DIMENSIONAL:

Height: 2.420"

Width: .830"

Depths: 2.450"

MOUNTING

Mounting Hole Dimension:

(Sized and designed for a #6 screw)

center to center: 2.080"

Key Leveling Adjustment: ¼' hex head

MECHANICAL:

Toggle Force: Minimum of 35 inch-grams measured at end of lever for standard toggle. Stronger toggle units available upon request.

Lever Angle: Straight angle switches toggle from 5° above (Off) to 5° below (On) horizontal position. 10°, 15° & 22° angle switches are measured in the up (Off) position using horizontal (0°) as the reference point. See first diagram below.

Toggle Angle: 9° angle from stop to stop when adjustment cams are in mid position.

Key Leveling Range: Cams will adjust to each stop ± 2° for tablet leveling.

Life: 200,000 cycles minimum; Production quality control requires 500,000 cycle minimum in random sample testing.

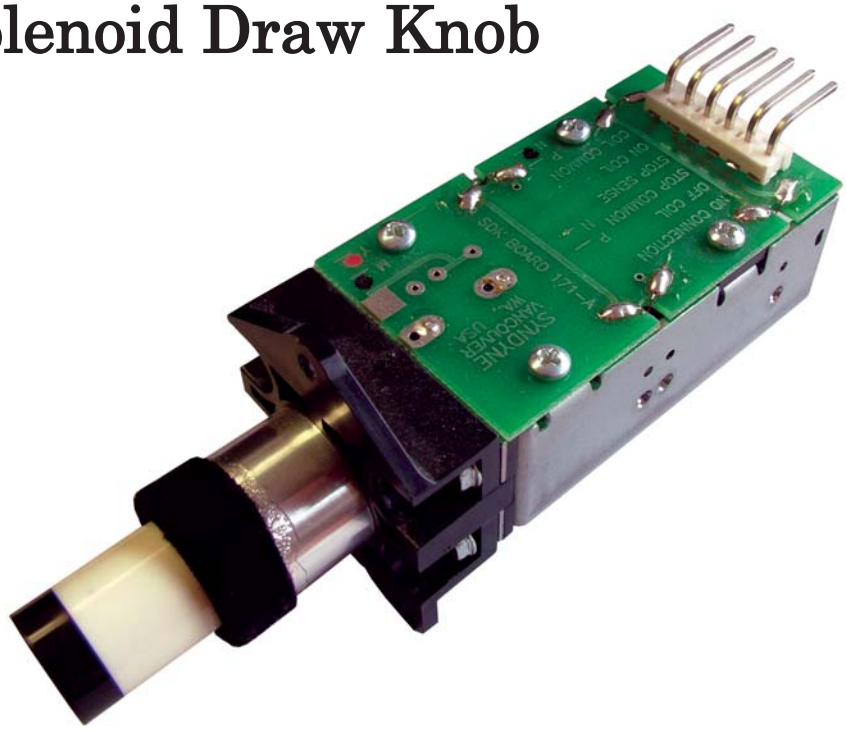
ELECTRICAL:

Reed Switch: 22 to 32 ampere turns sensitivity; .55 amp maximum switching voltage; 250 volts RMS minimum breakdown voltage; .100 ohms maximum initial contact resistance; .750 millisecond operating time including bounce. Reed switch must be protected from fly back voltage if directly operating an inductive load.

Circuit Board: Provisions to diode isolate two signals from one reed switch. Accepts two reeds maximum; both closing in either position. Separate holes for bussing reed switch and coil commons. Hole to accept wire tie to strain relief wire loom.

Terminals: Individual pads provided for solder connections. Optional plug-in connector is available.

SDK Solenoid Draw Knob



FEATURES:

- 12 volt or 24 volt operation. Specify when ordering
- Positive or negative coil common. Specify when ordering
- Positive or negative stop sense common
- Lightweight, compact design to facilitate tighter switch placement
- Easy to install
- Enclosed construction for dust protection
- Rugged, dependable
- Black, Red or Brown velveteen. Specify when ordering
- Traditional operation–Pull knob to turn on and push knob to turn off
- Elegant feel
- Models to fit on 1" or 3/4" thick jambs
- 3/4" or 3/8" travel length. Specify when ordering
- Black or white collars, stems, and heads. Specify when ordering

SPECIFICATIONS:

DIMENSIONAL:

Length: 3 5/8" from rear of jamb to end of connector

Mounting: Can be mounted in rows and columns as close as 1 3/4" by 1 3/4". Standard model mounts to 3/4" thick stop jamb. Optional 1" thick stop jamb available.

Weight: 6.24 ounces without head and stem.

MECHANICAL:

Travel: 3/4" travel between on and off positions is standard, 3/8" travel can be ordered as an option. Travel is centered in magnetic circuit to minimize bearing wear.

Detent: Travel feel provided by permanent magnets.

Housing: Enclosed design to eliminate mounting screws from attaching to detent magnet and dust from collecting in workings of SDK.

Indicator: A clear back cover displays current position.

ELECTRICAL:

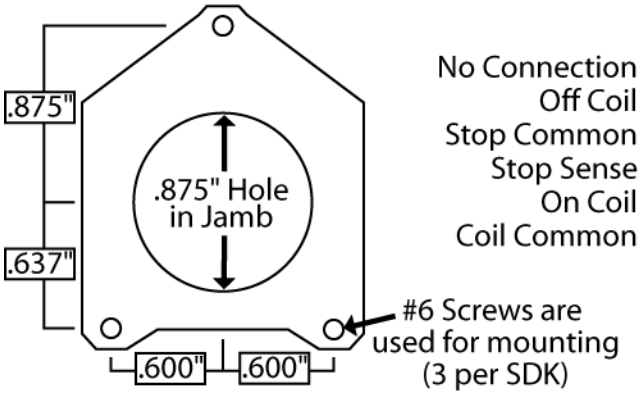
Reed switch: 0.55 amp maximum switching of resistive load. 200 volts rms minimum breakdown voltage. 0.100 ohms initial contact resistance. 0.750 millisecond operating time including contact bounce. Reed switch contact closes at 35% of travel from ON position, ensuring all stops turn off before any stops are added. Reed must be protected from fly back voltage if directly operating an inductive load.

Operating Voltage: Standard model has 28 ohm coils for use in 10-15VDC System. Other coil voltages available.

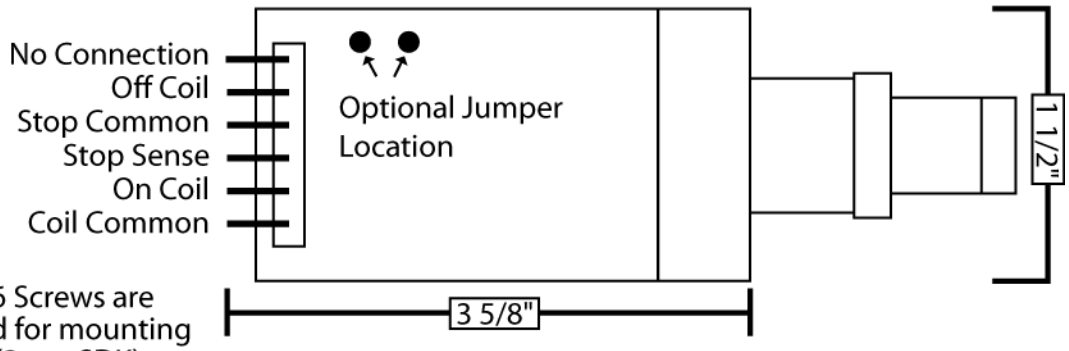
Circuits: Stop feed is isolated from coil common. Coil common can be ordered as positive or negative. Stop senses can have either positive or Negative feed. If both are same polarity, jumper can be added on board to simplify wiring Harness.

Connector: Supplied with .156" header on board and mating wiring connector. Can be ordered without header for soldering wires directly to board.

Mounting Information



Function of Terminals



SDK Felt Colors

Red Felt Black Felt Brown Felt

SDK Head Colors

White SDK Head Ivory SDK Head Black SDK .Head

SDK Stem Colors

White Stem Black Stem

SDK Collars and Indicator Rings

Black Collar White Collar

White Indicator Ring Black Indicator Ring

This page is intentionally blank

PISTON CONTROLS

Thumb Pistons Lit and Unlit

FEATURES:

- Lighted and standard models
- Patented design that allows either single or double touch operations
- Separate and distinguishable feels for each of the two touches
- Fine silver contacts, ensuring utmost reliability
- Flat button face for ease of engraving
- Five button colors available:
  - white (a stark white that matches electronic keyboards),
  - Off White (a dull white that matches traditional stops and knobs, like Hesco white
  - Ivory (a yellowed, brownish white that matches aged ivory)
  - Black
  - Red

SPECIFICATIONS:

DIMENSIONAL:

Total Length: .875" , including contact pins.

Total Diameter: .770" , including mounting flange.

Piston Length: .560"

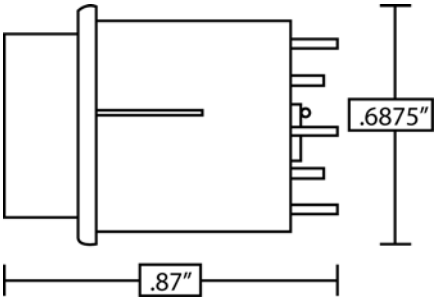
Mounting: Press fit into 11/16" hole.

MECHANICAL:

Piston Travel: .0625" to first contact; .140" to second contact.

Operating Pressure: 6 ounces to first contact; 16 ounces between first contact to second contact.

Life: 400,000 operations.



ELECTRICAL:

Contact Material: Fine silver (99.99%).

Contact Resistance: .1 ohm maximum after 25,000 operations with no load.

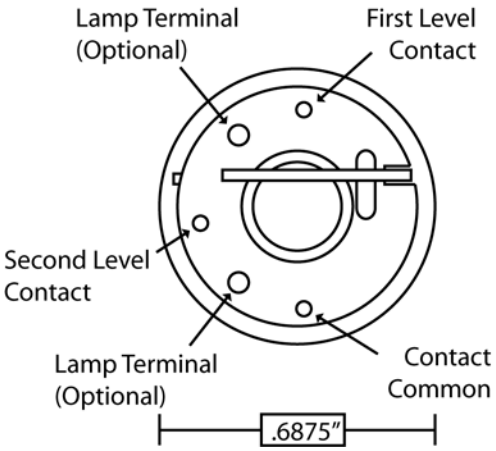
Contact Current: 1 amp maximum.

Contact Voltage: 50 volts maximum.

LAMP (5 VOLT):

Brightness: 0.15 MSCP (mean spherical candle power)

Current: 0.060 amps at 5 volts DC 0.057 amps at 4 volts DC



Voltage: 4 volts DC recommended as maximum to limit internal heat buildup

and prolong lamp life

Life: 2,000 hours at 5 volts DC 29,000 hours at 4 volts DC

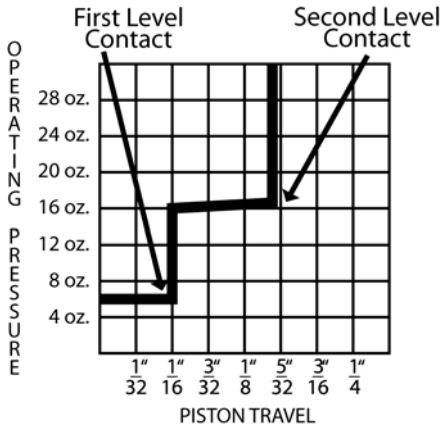
LAMP (18 VOLT):

Brightness: 0.15 MSCP (mean spherical candle power)

Current: 0.027 amps at 18 volts DC 0.023 amps at 14.4 volts DC

Voltage: 14.4 volts DC recommended as maximum to limit internal heat buildup and prolong lamp life

Life: 2,000 hours at 18 volts DC 29,000 hours at 14 volts DC



Toe Studs

FEATURES:

- Available in two finishes:
  - Rich, durable Chrome
  - Elegant Brass with protective clear coating
- Sturdy construction
- Smooth, quiet operation
- Flush mounting
- Anti-slip Pyramidal vinyl insert
- Black felt bushing

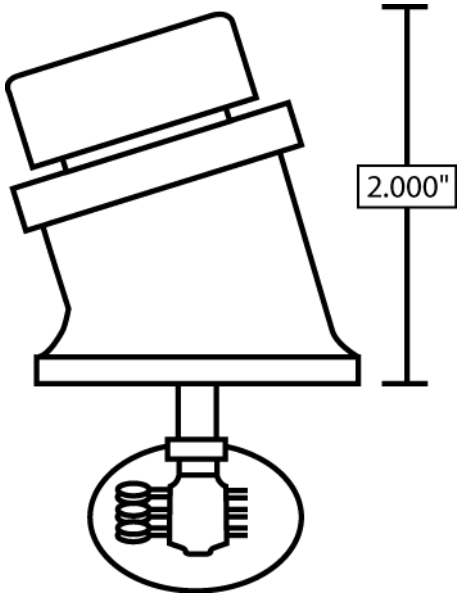
SPECIFICATIONS:

ELECTRICAL: (STANDARD CONTACTS)

Contact Material: Silver plated phosphor bronze.

Contact Resistance: .2 ohm maximum after 25,000 operation with no load.

Contact Current: 1 amp maximum.



Optional Contacts

Optional Contacts: Available for heavy current applications.

MECHANICAL:

Piston Travel: .125"

Operating Pressure: 5.5 pounds.

Life: 200,000 operations.

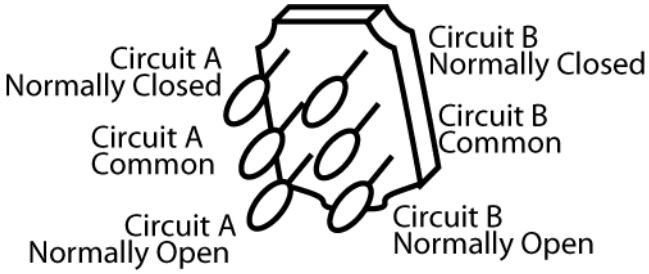
FINISH:

Chrome: Copper flash, heavy nickel base, chrome plating.

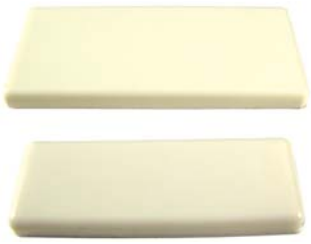
Brass: Clear two-stage protective coating over heavy brass plating.

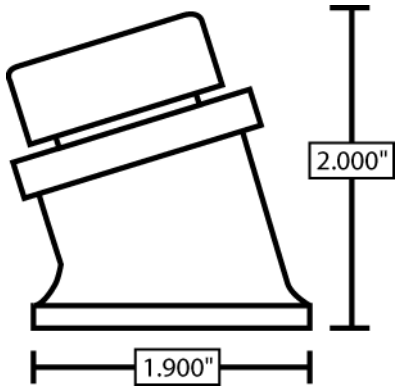
DIMENSIONAL:

See diagrams:

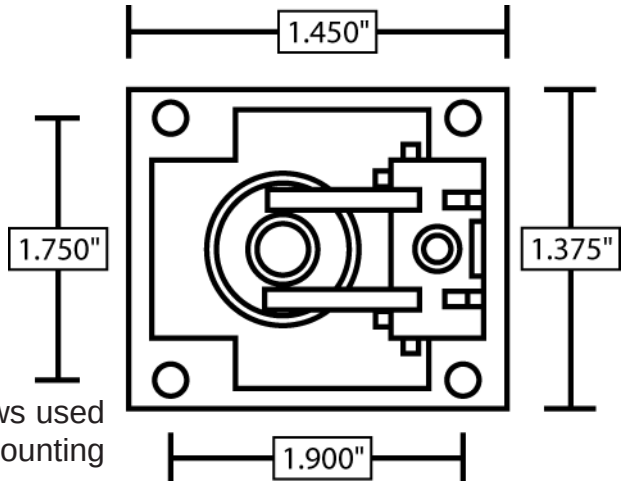


TOE STUD PLATES





Standard Contacts



#4 Screws used for Mounting

This page is intentionally blank

MISCELLANEOUS PRODUCTS

Pedal Key Caps

FEATURES:

- Abrasion and Scuff resistant phenolic material
- All Rounded Edges Provides a Sleek Look and a Smooth Feel

SPECIFICATIONS:

DIMENSIONS: A. G. O.

Height-

Rear: 2.690"

Front: 2.375"

Width: 0.812"

Length-

Overall: 5.550"

Between Mounting Screws: 4.570"

DIMENSIONS: COMPACT

Height-

Rear: 2.125"

Front: 1.600"

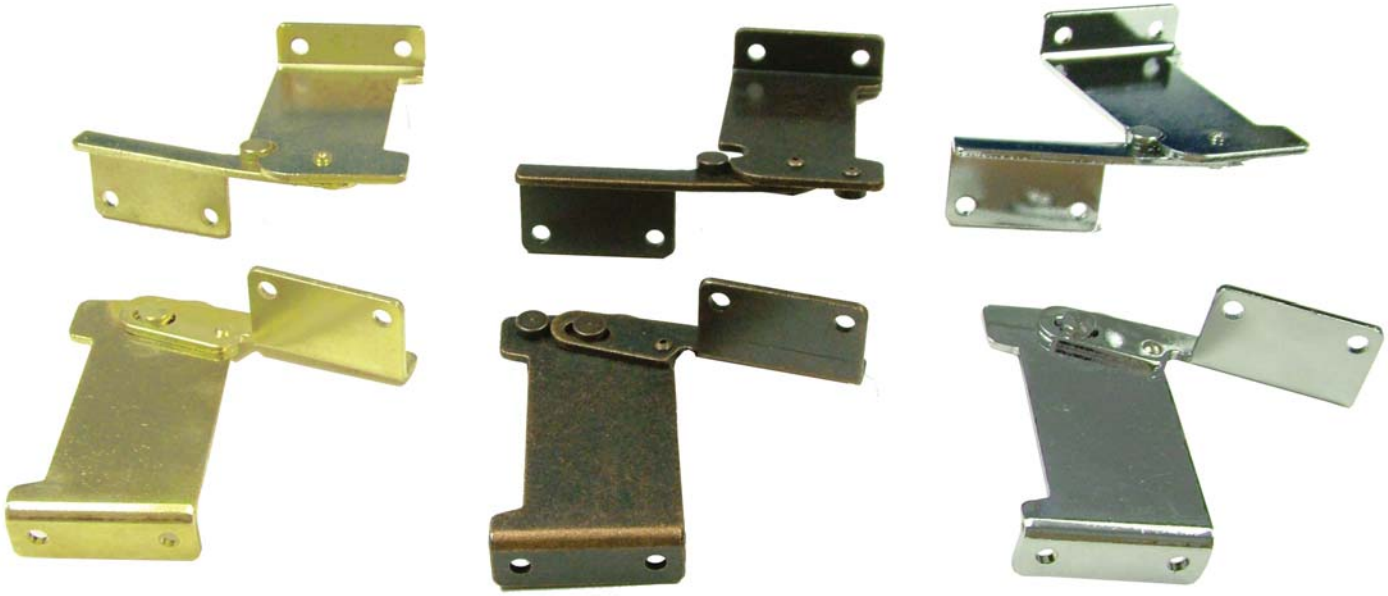
Width: .812"

Length-

Overall: 5.550"

Between Mounting Screws: 4.750"

Music Rack Hinges



FEATURES:

- Available in three finishes:
  - Rich, durable Chrome
  - Elegant Brass
  - Antique Bronze
- Sturdy Construction
- All Hardware Included

BILLING ADDRESS
ALL CORRESPONDANCE
SYNDYNE CORPORATION
PO BOX 820543
WA 98682-0012

TELEPHONE: (360) 256-8466
FAX: (360) 256-8208
EMAIL: SYNDYNE@SYNDYNE.COM
WEBSITE: WWW.SYNDYNE.COM

SHIPPING ADDRESS:
DELIVERIES ONLY
SYNDYNE CORPORATION
12109 NE 95TH ST
VANCOUVER, WA 98682-2407