Hauptwerk Hardware

System One

Full Organ Rebuild Solution

SYSTEM ONE
Hauptwerk Hardware

Incandescent Lamp Driver Board
Installation & User Manual

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This manual should be read in conjunction with the System ONE Control Board user manual which is available from the downloads page of the website. See link below.

https://www.hauptwerkhardware.com/downloads_page/

A brief introduction to System ONE.

What is System ONE?

System One is an electronic system which comprises a main control board and a number of separate interface boards which connect to the various controls of an organ console. It is very versatile and can be used in the smallest organ right up to the largest. It copes with pretty much any type and combination of organ controls, including:-

- Matrix Keyboards
- Bus Keyboards
- **Lighted Stops/Rocker Tabs**
- Motorized Stops
- **Lighted Pistons**
- Basic Unlit Stops & Pistons
- Memory Level Display
- Swell & Other Pedal Controls
- Crescendo Indicators
- On Demand Re-scan of static controls (Transpose, Tuning etc.)

The system requires only two Midi connections to the computer running the Virtual Pipe Organ software and it works with Windows, MacOS and Linux operating systems. There is no programming required and it is simple to set up with your virtual pipe organ of choice.

It has been designed to meet the specific needs of the organ enthusiast as well as the professional, in that it addresses the unique requirements of the organ as opposed to the many other products already used in this field which are really just generic Midi devices which the builder then has to connect together to form their own 'system'. For more information on System ONE please refer to the Overview Document available from the downloads page of the Hauptwerk Hardware website.

Who is it for?

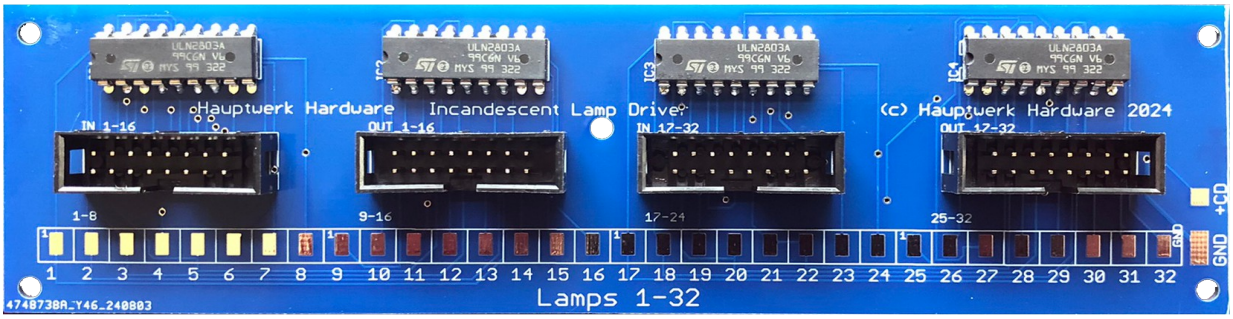
Hauptwerk Hardware System One is designed for both enthusiasts and professional users.

If you are planning an organ console build from scratch it is the ideal solution as you can plan each feature you want in your console and be certain that System One will cope with it easily. If you are rebuilding or 'Midifying' an existing console, System One will provide you with the easiest way to connect all the controls of your console and generate the required Midi signals to work with your computer without the need to perform any programming, only a few jumpers need to be set in order to tell the system what options you want to select.

It is ideal for use with Hauptwerk, Grand Orgue and any of the many other virtual organ software solutions available which use Midi as their input.

The System ONE Incandescent Lamp Driver Board.

Below is a picture of the System ONE Incandescent Lamp Driver board.



What does it do?

The System ONE Incandescent Lamp Driver Board is used to power legacy incandescent or filament light bulbs as found on many organ consoles in lighted draw stops, lighted rocker tabs as well as some older lighted pistons. All the System ONE boards that operate these control such as the lighted rocker-tabs and lighted pistons boards have outputs which are designed to operate LEDs. Because the older filament type bulbs require much more current compared to modern LEDs these Interfaces are not capable of driving these bulbs directly.

This is where the Incandescent Lamp Driver Board is used. Basically it is capable of switching enough current to drive these older lamps. It takes the control i.e. on or off signals from the interface boards and operates the lamp switches accordingly.

The driver is rated for use with bulbs operating at up to 30 volts and each switch can control up to 500mA BUT with the caveat that the whole chip can only dissipate 2.25 Watts continuous power. This is plenty for these old legacy bulbs.

One Incandescent lamp driver board can switch up to 32 lamps.

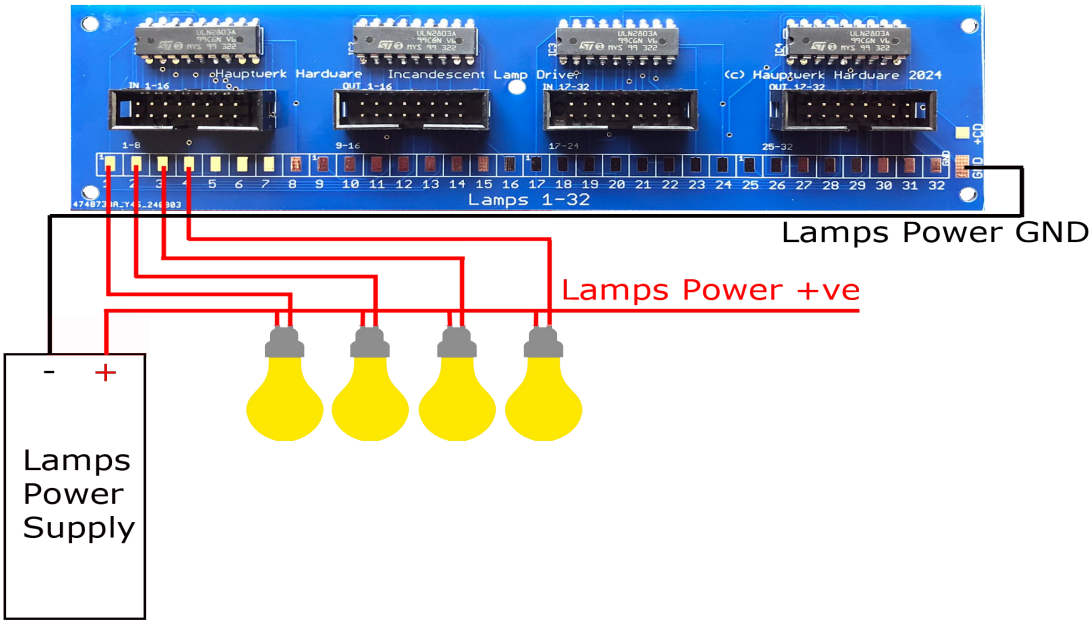
Connections & Operation.

There are 32 solder pads along the bottom of the board labelled 1 through 32. These are the lamp connections. The driver board works by switching the Negative or Ground side of the lamps, as opposed to the LED outputs which switch the positive feed to each LED. This means that the board needs to be wired differently to LEDs.

There are four 16-way header sockets on the board, from left to right these are; Inputs 1-16, Outputs 1-16, Inputs 17-32 and finally Outputs 17-32. The input sockets connect directly to the relevant System ONE Interface's 'Incandescent Lamp Driver Board output' socket via a 16-way ribbon cable terminated with a matching IDC connector.

The output sockets connect directly to the lighted rocker-tabs boards as pictured in the System ONE Lighted Rocker-Tabs Interfaces Manual, available free from the downloads page of the website.

On the next page is a diagram showing how to wire the lamps using the Incandescent lamp driver board.



Obviously it is up to the installer which method of connection to choose when connecting the lamps either directly connected like in the above diagram, by using the IDC output sockets, or a mixture of both.

Mounting

All System ONE boards have a number of mounting holes of 3mm diameter each. These are for mounting the board in a convenient place within your console. It is important to consider that the reverse of the board is made from copper and that parts of this copper surface carry the electrical signals to and from the encoder. It is therefore necessary to ensure that whatever mounting method you use does not allow the reverse of the board to come into contact with any conductive surface, as doing so may present a fire risk and or cause irreparable damage to the board. It is suggested that suitable insulating spacers be used in mounting the board leaving a gap of at least 5mm between the board and the mounting surface. The front surface of the board is also made from copper and the same advice applies.

The board is suitable for mounting at any angle in any plane. The board must be installed in a position where it will not suffer condensing moisture, water, physical shock or any contact with moving parts. It must be protected from any conductive items, parts or waste that may fall on it.

Our Hardware Ethos.

The hardware used in this controller is an Atmel AVR along with other components. Some of these components are readily available as a ready assembled 'core' unit which can then be programmed with whatever firmware you wish. Hauptwerk Hardware buy these 'dev' boards and use them to build our products. These microprocessors exclusively use our own production firmware and contain no boot loaders or other third party code. This firmware remains our intellectual property. It is copyright and protected from being read from the AVR.

The logic behind using these 'dev' boards is that they are readily available and likely to remain so for some considerable time. Should any of our products ever fail in the future, it is easy to simply unplug the dev board and replace it with a new one, safe in the knowledge that one will still be

available. This is in contrast to our competitors bespoke boards whose availability is entirely dependent on provisions made by that particular manufacturer at the time.

Legal Disclaimer:

It is the installers responsibility to ensure that they have familiarized themselves with this product and its documentation and have the necessary understanding and technical and practical competence to be able to install and use it correctly. Whilst every care has been taken in the design, testing and documentation of this product, Hauptwerk Hardware will accept no liability whatsoever for any physical or consequential damage or injury caused by the use of any of our products in any circumstances.

Warranty.

All equipment supplied by us will carry a 12 month warranty against faulty parts or workmanship. Extended warranties are available in some countries at an additional cost. Should any part of the new system fail within this period we will repair or replace it free of charge. It should be noted however that correct operation of the new system depends on the existing console controls such as keyboards, stops etc. continuing to work correctly, along with power supplies et al, especially in pipe organs. Any failure of these existing controls will obviously have an adverse effect on the operation of the new system, this type of issue will ***not*** be covered under the warranty.

Any faulty item must be returned to us for inspection & repair. Initially the customer will pay the shipping for any products returned. All returns from outside the UK **MUST BE CLEARLY MARKED AS "WARRANTY RETURN - ZERO COMMERCIAL VALUE"** as Hauptwerk Hardware will **NOT PAY** any import duty on returns and any packages not marked as above will be returned or destroyed by UK Customs **at their discretion**.

Once the return is received by Hauptwerk Hardware we will video it's unboxing and testing. If the product is found not to be faulty a testing charge* will be made and the customer will be invoiced for this as well as the return shipping. The testing video will be made available to the customer.

If the product is found to be faulty due to faulty manufacturing or premature component failure Hauptwerk Hardware will repair or replace it at our discretion. We will reimburse the customer for the shipping costs they incurred in returning it and we will send the replacement or repaired item to the customer with free shipping.

The same procedure applies to returns from within the UK save for need to mark the package as warranty return. The warranty does not cover damage caused by mishandling, inappropriate connection, incompetent or inappropriate installation.

Further Information.

If you require any further information or have any questions please feel free to call us on +44 (0) 333 577 2393 and we will be happy to clarify anything or provide any further information you may need. Business hours are 09:30 to 17:00 Monday – Friday UK Time.

Contact Details.

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