

# NSI DIGITAL DIMMING SYSTEM

## DDS 3600R RELAY PACK

### INSTALLATION AND OPERATION GUIDE

#### Software Revision 1.0, Version C UL Versions

#### *INTRODUCTION*

The NSI DDS 3600R relay pack represents a key part of a state of the art, integrated lighting control system.

These solid state relay packs are designed for portable or semi-permanent use for entertainment or display lighting. Several DDS dimmer and relay packs may be combined for more channels of lighting.

#### *SPECIFICATIONS*

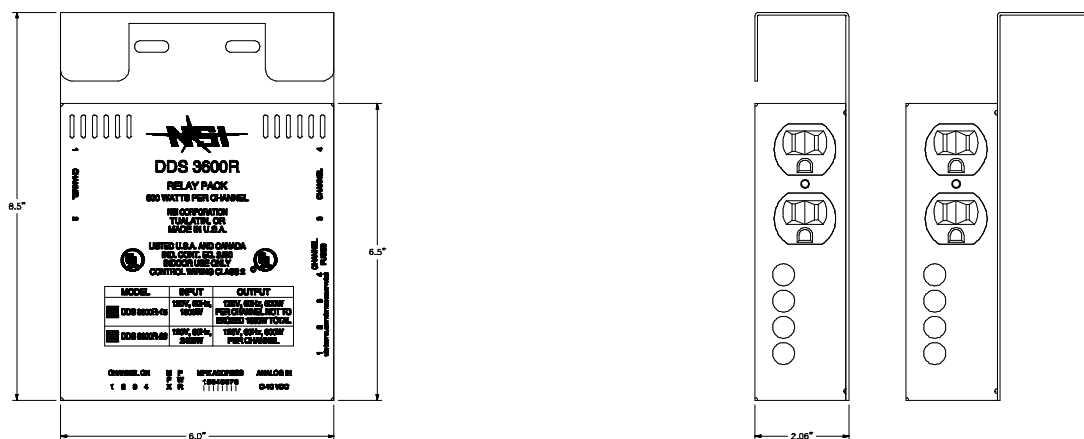
|                      |   |
|----------------------|---|
| Number of Channels:  | 4   |
| Output capacity:     | 600 watts per channel   |
| Input Voltage:       | DDR 3600-15: 120 VAC 1800 Watts Max.<br>DDR 3600-20: 120 VAC 2400 Watts Max.  |
| Control system:      | Microprocessor digital zero-crossing relay mode.  |
| Control Input Types: | 0 - 10VDC each channel on 5 pin DIN connector.<br>(switchpoint: on @ 2V, off @ .75V)<br><br>MICROPLEX multiplex signal (128 channel) on<br>three pin XLR type connector. (20% switchpoint)<br><br>DMX-512 digital signal (512 channel)<br>on five pin XLR optional. (20% switchpoint) |
| Control Wiring:      | Class 2 low voltage.  |
| Output Connections:  | 1 NEMA 5-15 outlet per ch.  |
| Cooling System:      | Passive internal aluminum heatsinks.  |
| Enclosure Type       | For indoor use only,<br>(Utilizer dans un endroit a l'abri )  |

## MOUNTING

The NSI DDS 3600R relay packs are designed to be mounted vertically. Each pack is provided with a reversible hangar bracket that can be hung on up to 1 15/16" tubing, or may accept a pipe clamp. **BE SURE TO USE A SAFETY CABLE TO PREVENT INJURY IF PACK FALLS.**

Since the DDS 3600R depends upon convection cooling, room air flow must be insured. Keep the air vents located on each side of the pack clear of dust or any obstructions. In order for unit to cool properly the surface containing the control receptacles must be orientated towards the floor.

If several units are to be operated in a small enclosed room, adequate ventilation must be provided to prevent the room temperature from exceeding 100 degrees Fahrenheit



## AC POWER CABLE.

This is the main power cord for your relay pack which ultimately carries all of the ac power consumed by lights connected to the relay pack. The DDS 3600R with the NEMA 5-15 plug is limited to 1800 watts max., while the unit with the NEMA 5-20 plug will support the full 2400 watts. It must be connected to a power source capable of supplying the total power drawn by the lights. (See specifications for details on maximum power capability.)

**WARNING: Do not remove grounding prong of AC plug. To do so may allow exposure to potentially lethal voltage levels and will void the warranty on this product.**

## AC OUTPUT RECEPTACLES

The DDS 3600R has one AC receptacle for each channel. These receptacles provide power to the lamps in your lighting system. The amount of power supplied to these outlets controls the operation of the lamps connected.

The total lamp wattage connected to each channel must not exceed the rating of each channel (see specifications). Most 120VAC lamps and fixtures and some transformer type low-voltage fixtures may be connected to these outlets.

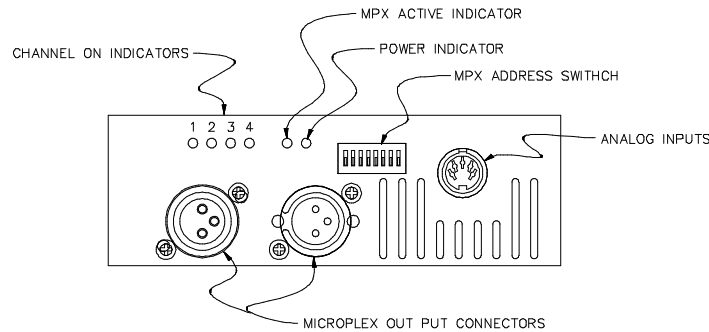
**NOTE: Some inductive type loads such as transformers, ballasts, and motors with poor power factor may cause the relay to output D.C. type current. This may cause the load to draw excessive current and overheat, causing damage to the transformer, ballast, or motor. For this reason, it is necessary to insure any inductive loads are fused individually for their respective normal operating current.**

**MICROPLEX MULTIPLEX CONTROL WIRING.**

Microplex is the control protocol used on most NSI lighting consoles. This system uses a single three conductor cable to transmit up to 128 channels of relay (or pack) control. For short distances (50 feet or less) a standard microphone cable may be used to carry both the control signal and the DC power source for NSI control consoles. Longer distances may be accommodated with 18 gauge or better cable to reduce voltage losses of the power supply.

Connect the Microplex control cable to either of the three pin XLR jacks. Since both jacks are wired in parallel, another control cable may be connected between the remaining jack and another relay pack. Many relay packs may be "daisy chained" together in this manner.

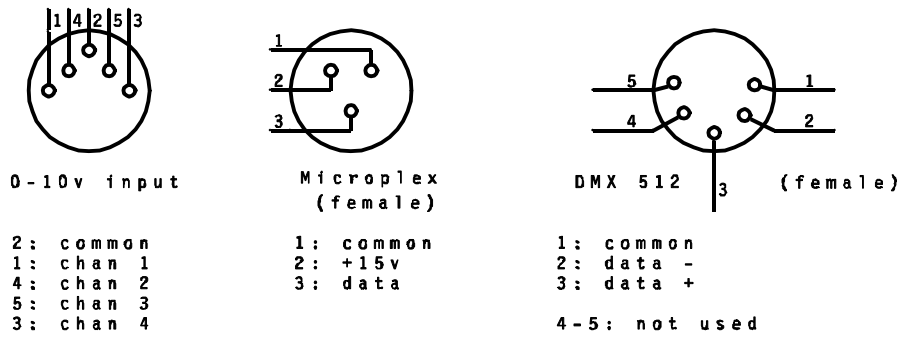
Be sure to set the Channel Address dip switch as required (see DIP SWITCH SETTINGS).



**ANALOG 0 - 10 VDC CONTROL WIRING.**

Each of the four relay channels of the DDS 3600R may be operated by an analog 0 - 10 VDC control voltage. This type of control will provide 0% intensity at less than 1 volt and 100% intensity at greater than 2 volts (to a maximum of 10 volts). Any or all of the DDS 3600R relay channels may be operated in this manner simultaneously with any multiplex control input. Each relay will respond to the greater of any control inputs.

The analog control input uses a standard 5 pin DIN plug which is available from most electronics supply houses. Connect each of the positive channel control wires to the desired relay channel input pins (see diagram) of the plug. Connect the common (ground) control wire to the pin indicated on the diagram. Consult the documentation of the analog control console or device you are using for the proper connections. The control input impedance is 4.7K ohms.



### ***DMX-512 multiplex control wiring.***

DMX 512 is the United States Institute of Theater Technology (USITT) standard for the digital control of dimmers. NSI DDS relay products can be converted from Microplex to DMX 512 digital multiplex with a simple kit available from your dealer.

DMX-512 is the preferred type of control wiring when many relay or pack channels are used, because of the high update rate and the resistance to interference. It is recommended in locations subject to electrical noise. DMX-512 only requires 3 wires to transmit lighting levels for as many as 512 relay or dimmer channels. Most of the NSI lighting control consoles can optionally use this interface.

Connect the DMX 512 cable from the control console to the male input connector. Another cable may be connected from the female connector to the male connector on another pack. Many relay packs may be "daisy chained" or connected together in this manner.

Be sure to set the Channel Address dipswitch as required (see DIPSWITCH SETTINGS).

### ***LED INDICATORS***

The front panel indicator LEDs indicate the status of the relay.

- RED - Indicates the firing card is receiving DC power.
- GREEN - Steady indicates a multiplex control signal is being received.
- YELLOW - Indicates a respective relay channel is active.

### ***AUTO LAMP TEST***

Whenever dipswitch #8 is in the off (down) position and there is no multiplex signal detected, all channel outputs will come to full intensity.

### ***CHANNEL FUSES***

Each channel is protected by a fuse to help prevent overload and damage to the power control devices used in the relay. Be sure to replace the fuse with the same type and rating. Replacement with the wrong fuse is dangerous and will void your warranty.

**Note: Lamps may sometimes cause a temporary "short-circuit" when the filament burns out and cause the fuse to blow. This is normal and protects the internal relay circuitry from damage.**

### ***INSTALLATION and OPERATION TIPS***

**Care should always be taken to:**

- 1) Keep all AC wiring away from control wiring.
- 2) We also recommend power up and performance checks be done one unit at a time. This can be a real time saver should problems arise thus eliminating unnecessary isolation techniques to resolve problems.

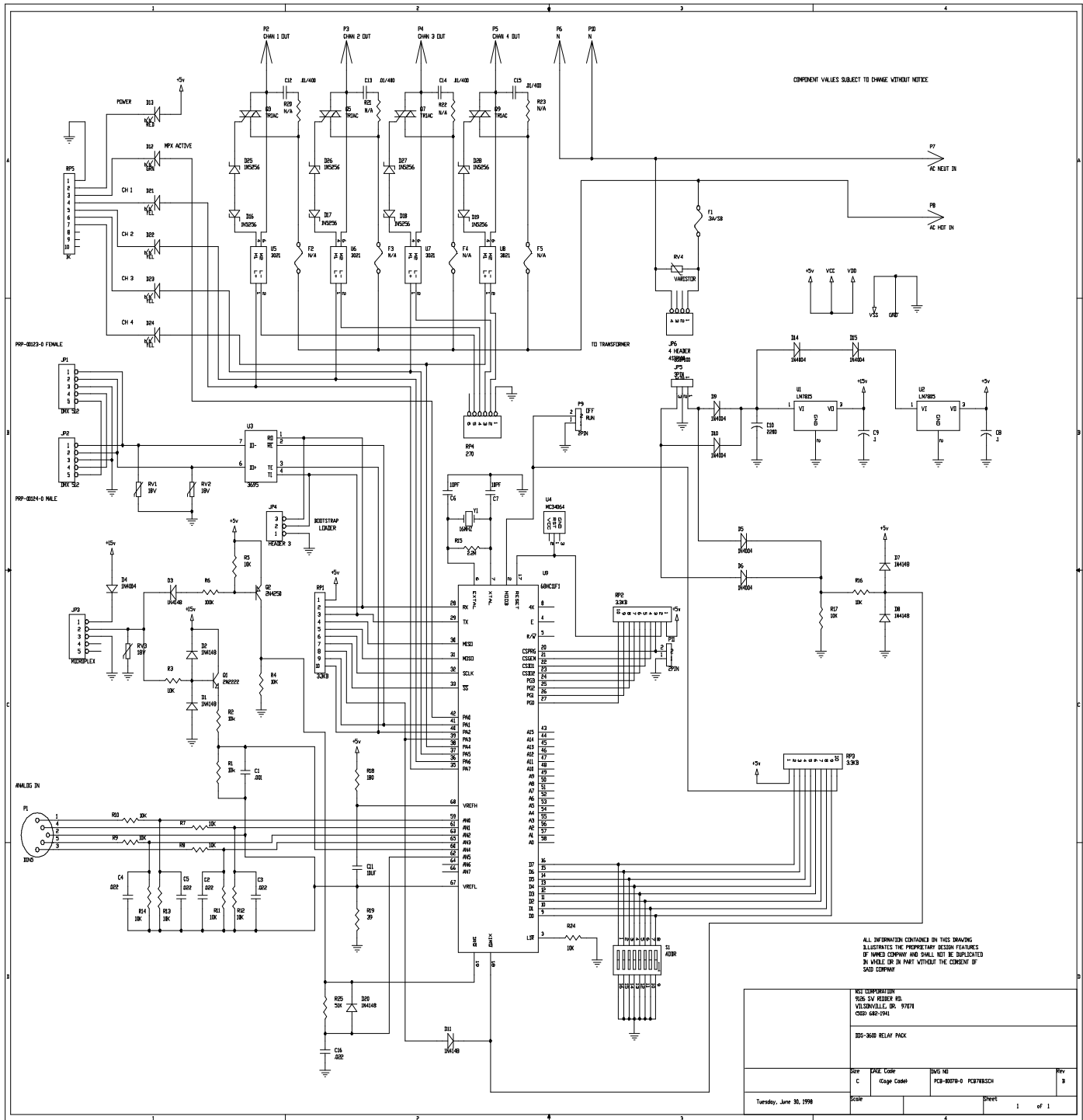
**SWITCH SETTINGS**

When using any of the multiplex control systems the dip switches on the front panel of the DDS 3600R must be set to assign the desired relay channels. The switches control the relay channels in groups of four. See the following chart for settings.

**DIP SWITCH CHANNEL ASSIGNMENTS (1=up, 0=down)**

|         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|
| CONTROL | 1234567 | CONTROL | 1234567 | CONTROL | 1234567 |
| 1-4     | 0000000 | 5-8     | 1000000 | 9-12    | 0100000 |
| 13-16   | 1100000 | 17-20   | 0010000 | 1-24    | 1010000 |
| 25-28   | 0110000 | 29-32   | 1110000 | 33-36   | 0001000 |
| 37-40   | 1001000 | 41-44   | 0101000 | 45-48   | 1101000 |
| 49-52   | 0011000 | 53-56   | 1011000 | 57-60   | 0111000 |
| 61-64   | 1111000 | 65-68   | 0000100 | 69-72   | 1000100 |
| 73-76   | 0100100 | 77-80   | 1100100 | 81-84   | 0010100 |
| 85-88   | 1010100 | 89-92   | 0110100 | 93-96   | 1110100 |
| 97-100  | 0001100 | 101-104 | 1001100 | 105-108 | 0101100 |
| 109-112 | 1101100 | 113-116 | 0011100 | 117-120 | 1011100 |
| 121-124 | 0111100 | 125-128 | 1111100 | 129-132 | 0000010 |
| 133-136 | 1000010 | 137-140 | 0100010 | 141-144 | 1100010 |
| 145-148 | 0010010 | 149-152 | 1010010 | 153-156 | 0110010 |
| 157-160 | 1110010 | 161-164 | 0001010 | 165-168 | 1001010 |
| 169-172 | 0101010 | 173-176 | 1101010 | 177-180 | 0011010 |
| 181-184 | 1011010 | 185-188 | 0111010 | 189-192 | 1111010 |
| 193-196 | 0000110 | 197-200 | 1000110 | 201-204 | 0100110 |
| 205-208 | 1100110 | 209-212 | 0010110 | 213-216 | 1010110 |
| 217-220 | 0110110 | 221-224 | 1110110 | 225-228 | 0001110 |
| 229-232 | 1001110 | 233-236 | 0101110 | 237-240 | 1101110 |
| 241-244 | 0011110 | 245-248 | 1011110 | 249-252 | 0111110 |
| 253-256 | 1111110 | 257-260 | 0000001 | 261-264 | 1000001 |
| 265-268 | 0100001 | 269-272 | 1100001 | 273-276 | 0010001 |
| 277-280 | 1010001 | 281-284 | 0110001 | 285-288 | 1110001 |
| 289-292 | 0001001 | 293-296 | 1001001 | 297-300 | 0101001 |
| 301-304 | 1101001 | 305-308 | 0011001 | 309-312 | 1011001 |
| 313-316 | 0111001 | 317-320 | 1111001 | 321-324 | 0000101 |
| 325-328 | 1000101 | 329-332 | 0100101 | 333-336 | 1100101 |
| 337-340 | 0010101 | 341-344 | 1010101 | 345-348 | 0110101 |
| 349-352 | 1110101 | 353-356 | 0001101 | 357-360 | 1001101 |
| 361-364 | 0101101 | 365-368 | 1101101 | 369-372 | 0011101 |
| 373-376 | 1011101 | 377-380 | 0111101 | 381-384 | 1111101 |
| 385-388 | 0000011 | 389-392 | 1000011 | 393-396 | 0100011 |
| 397-400 | 1100011 | 401-404 | 0010011 | 405-408 | 1010011 |
| 409-412 | 0110011 | 413-416 | 1110011 | 417-420 | 0001011 |
| 421-424 | 1001011 | 425-428 | 0101011 | 429-432 | 1101011 |
| 433-436 | 0011011 | 437-440 | 1011011 | 441-444 | 0111011 |
| 445-448 | 1111011 | 449-452 | 0000111 | 453-456 | 1000111 |
| 457-460 | 0100111 | 461-464 | 1100111 | 465-468 | 0010111 |
| 469-472 | 1010111 | 473-476 | 0110111 | 477-480 | 1110111 |
| 481-484 | 0001111 | 485-488 | 1001111 | 489-492 | 0101111 |
| 493-496 | 1101111 | 497-500 | 0011111 | 501-504 | 1011111 |
|         | 505-508 | 0111111 | 509-512 | 1111111 |         |

SERVICE INFORMATION



## **WARRANTY**

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### *NSI Corporation Limited Warranty*

NSI Corporation warrants new electronics products to be free from defective materials and workmanship for a period of one (1) year from the date of purchase to the original owner when purchased from an authorized NSI dealer.

The purchaser is responsible for completing and mailing to NSI, within 15 days of purchase, the warranty registration card enclosed with each product. NSI products that have been subject to accident, alteration, abuse, or defacing of the serial number are not covered by this warranty. The normal wear and tear of items such as knobs, jacks, and switches are not covered under this warranty.

If your NSI product requires service during the warranty period, NSI will repair or replace, at its option, defective materials provided you have identified yourself as the original owner of the product to NSI or any authorized NSI dealer. Transportation charges to and from an authorized dealer or the NSI factory for repair shall be the responsibility of the owner. All products returned to NSI must have factory authorization for return prior to shipping.

NSI Corporation is not liable for any incidental or consequential damages resulting from defect or failure other than repairs of the NSI product subject to the terms of this warranty. This warranty gives you specific legal rights, and you may have other rights which vary from state to state. This warranty is expressly in lieu of all other agreements and warranties expressed or implied except as may be otherwise required by law.