

# RICHMOND CONTROLS NEWSLETTER - FIRST QUARTER 2005

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board was required to make assembly of these models more reasonable. The prototype circuit has been through a couple of design iterations, and I hope to get some boards made soon. Until then, we are accepting requests to notify potential customers when the module is available.

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## NEW APPLICATIONS FOR MODULES

We are presently working with various customers to find new installation techniques for existing lighting modules. Some of these are:

**Bachmann On30 Coach:** A well-known narrow gauge fan, Ted Brandon, suggested that this scale could use some Richmond Controls lighting products. It appears that the car will be easy to work with, and the goal for the prototype will be to install track powered and flicker resistant interior lights, marker lights, and a tail sign, all using only LEDs.

**O Scale Marker Lights and Headlights:** Dennis and Kathy Mashburn at K&D Casting make some wonderful brass O Scale detail parts. I am working on installing white and/or colored surface mount LEDs in some of their parts to achieve working O Scale headlights and marker lights.

**S Helper F7:** This locomotive has headlight holes significantly larger than the LEDs we offer. Just using a 3 mm LED in a bezel would probably yield a headlight whose "bulb" appears to be too large. It appears that the best approach will be to make bezels to fit the headlight holes, reduce the tips of some 3 mm LEDs to about 0.080", countersink the backs of the bezels for the LEDs, and bond the two together as assemblies. It is a different style of lighted bezel, for S Scale.

**HO Scale Hood Diesels:** Some of these models would seem to be ideal candidates for LED headlights using LEDs with reduced diameter tips. Unfortunately, some models like the Kato HO Scale GP35 do not have clear access to the inside opening of the headlight hole, and a modified 3 mm LED will not fit. Even fiber optics can't be used easily. A bright Golden White LED headlight can be fitted by inserting the wires of a surface mount LED through the open headlight hole from the front, removing the backing from a small MV lens, gluing the surface mount LED to the back of the MV lens, and pulling the LED/lens subassembly back until it plugs the hole.

**GHQ N Scale Beavertail Observation:** We are working with one customer to provide flicker-resistant, track powered lighting for this beautiful Milwaukee Road

car. It will have a red Mars Light, two red marker lights, and distributed interior lighting using only LEDs.

**Porch-Mounted Ditch Lights:** Detail Associates makes plastic porch mounted ditch light stands in HO Scale (LT1026 and LT1027), and Sunrise Enterprises makes the same thing in pewter for N Scale (N-614). These can be fitted with Sunny White surface mount LEDs to achieve bright porch mounted ditch lights not using fiber optics or anything else sticking out the back. Using LEDs here in the ditch light stands essentially duplicates the prototype.

**Sunrise Enterprises N Scale SP Barrel-Type Mars Light:** This Sunrise detail part (N-630) is essentially a bezel with some extra detail for exterior mounting. A through hole can be drilled in the part, and then the part can be countersunk to accept a Golden White surface mount LED. I will be happy to provide instructions for doing the modifications on request.

**Atlas and Micro Ace N Scale Mogul:** Some modelers feel that the headlights in these beautiful locomotives are far too dim. By now, I'm sure you can predict what I'm going to say -- a Golden White surface mount LED can be fitted into the headlight detail part to yield a bright golden-white headlight. This is not a particularly easy modification, particularly since I haven't discovered a way to remove the clear plastic light guide. Details can be furnished on request.

**Bachmann N Scale Full Dome:** A customer requested full flicker-resistant interior lighting in this car, including subdued blue lights in the upstairs dome area to represent blue night lights. This turned out to be fairly easy, once we figured out how to provide wipers to pick up track power. We had to eliminate the center axle on the six-wheel trucks, but this doesn't affect operation. The interior lights downstairs are the normal subdued golden white color.

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## TRAIN SHOWS

Upcoming Train Show plans for Richmond Controls include the O Scale March Meet (Arlington Heights, IL, March 19 & 20, 2005), Santa Fe Historical Society Convention (Pasadena CA, June 21-25), National Train Show (Cincinnati, July 8-10), San Antonio Train Show (August 6&7), and the N Scale Collector Convention and NTRAK Convention (San Diego, August 15-20).

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## INTRODUCTION

The following discusses what's new at Richmond Controls since the Fourth Quarter 2004 Newsletter. Feel free to call if you need additional information - Jim

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## PRODUCT REDESIGN

**Second Law of Thermodynamics:** My favorite way to paraphrase the Second Law of Thermodynamics is "The entropy of the universe is always increasing". (*Entropy* can be thought of as a measure of disorder.) One of Murphy's other laws says it a different way: "Left to themselves, things go from bad to worse". Everything in the universe is slowly falling apart. You have to add energy or effort to a system just to get it back to the point where it started. I'm sure anyone who owns a home or a car can sympathize.

Richmond Controls products are not immune to the influence of the Second Law or any of Murphy's Laws. Lately, I've had to expend redesign effort just to get back to the point where we could continue to produce standard products.

Our main problems have been the departure of a reliable assembler (he moved away). Also, some parts and supplies have been obsoleted by their manufacturers, and we have to work around these problems. For example, I can no longer obtain the #32 insulated and stranded wire used on modules and our plug and socket sets. For now, I am changing to solid enameled wire for the modules (and I think I like it better), and the plug and socket sets will not be available until I can deal with the wire problem.

My favorite voltage regulator was obsoleted, requiring me to design a new circuit board to be able to use a different regulator. The new circuit will be better in many ways, but it will not be available for a month or two.

**Sockets for LED wires:** Some modules like the EZ26, EZ31, EZ41, EZ51, and EZ61 come with FREDs or LEDs that need to be mounted into the model and then attached to the EZ-LITE™ module. One of my personal rules is to not design anything that requires soldering by the user. We have used forked terminals in the past in an attempt to let the user avoid soldering, but these have been tricky to use.

Now we have changed the design to utilize tiny gold plated sockets for attaching the LED wires to the modules. We use the same #36 enameled wire that Sunrise Enterprises uses on its FREDs, and this wire is

too small for the smallest sockets. The solution is to double the wire over twice to have four strands, twist it tightly, apply solder, and the resulting wire tip is the right diameter to remain securely in the sockets. Our tail light and marker light LEDs will have wires prepared in this manner. Anyone wanting the same wire tips on Sunrise Enterprises FRED wires is welcome to request instructions recommending how to prepare these thicker wire tips.

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## NEW PRODUCTS

**Lighted Bezels:** In the past, we recommended using bezels and lamps in existing headlight holes in cab type locomotives like PA1s and F7s in all scales. Now that we have stopped using lamps and only use LEDs, a new approach is needed. One approach that is working very nicely is to countersink the back side of a bezel, insert a Golden White or Sunny White surface mount LED, and form a lens in place in front of the LED and inside the bezel's reflector. The result is an integrated assembly that looks like a bezel with a lens in the front and two #36 wires coming out the back. For a module supplied with lighted bezels, the user just removes the stock lens, inserts the lighted bezel into the headlight hole, connects the wires, and the result is nice bright lights using white LEDs with no blue tint. The light source is actually inside the bezel's reflector, and the bezel is almost totally contained within the thickness of the body shell. This makes it about as close to the actual prototype as you can get.

Lighted bezels are being supplied with modules meant for N Scale cab units like the new Kato F3, where there is almost no room inside the shell behind the headlight hole to allow for the use of a modified 3 mm LED. This means the user doesn't have to modify the chassis or its parts to accommodate the light assembly, and we can remain true to our motto: "No Chopping".

Lighted bezels will be supplied with Richmond Controls modules on customer request or when no other approach seems reasonable. Until our manufacturing process for them achieves a higher yield, they will not be offered separately.

**Emergency Vehicle Lighting:** At recent train shows, I have been exhibiting an HO Scale highway patrol car and an N Scale Athearn fire truck, both equipped with an assortment of red, blue, yellow and white complex strobes, alternating headlights, rotary beacons, etc. These have been very popular, and many potential customers have wanted to purchase the lighting kits (which use ONLY LEDs). I realized that a new circuit