

binay

OVERHEAD CRANE BUSBAR POWER INDICATOR (DSL/CRS) UTILISING LIGHT EMITTING DIODES (LEDs)

The BINAY LED Crane Power Indicator is a vibration-resistant, solid-state unit which provides a MAINTENANCE-FREE 'fit-and-forget' solution for busbar power indication in overhead cranes

In overhead cranes, it is mandatory to indicate the energised status of the supply on the adjacent busbar. To enable visibility at a distance this is normally done by means of 100-watt filament bulbs.

The obligatory safety requirement calls for such 3-phase indication to be provided at distances of every 10 to 20 metres throughout the length of the shed. However, the fragile filament of the conventional incandescent bulb is unable to withstand the extreme shock and vibration which is present due to the movement of these cranes, and consequently these bulbs fail very frequently. This is extremely hazardous, as the fused and unlit bulb can give an incorrect indication, causing confusion and creating a potentially dangerous and unsafe condition for personnel. Moreover, the changing of these bulbs at the extreme heights of the busbars is a cumbersome and hazardous procedure.

BINAY has developed unique **long-life, maintenance-free, shock-proof and vibration-resistant** crane Indicator units (DSL/CRS) using LEDs. LEDs being solid-state devices are impervious to vibration; they also offer the following additional advantages:

- A long life of 1,00,000 hours (11 years on a continuous burning basis, thus requiring **no further replacement once fitted**; BINAY guarantee for three years against manufacturing defect failure)
- Low power consumption (as a result of our patented circuitry), greatly reducing energy costs
- Ability to withstand an input voltage variation of up to ± 25 percent (which normally occurs on the starting and stopping of crane motors)
- Solid-state reliability
- A short payback period

These units are available in two models:

Omni Type: This provides all-round visibility and greater clarity at a distance, as high intensity LEDs are mounted in a circular configuration (see figure 1). These LED arrays are affixed in circular black oxidised or chrome-plated brass modules, with polycarbonate fire-

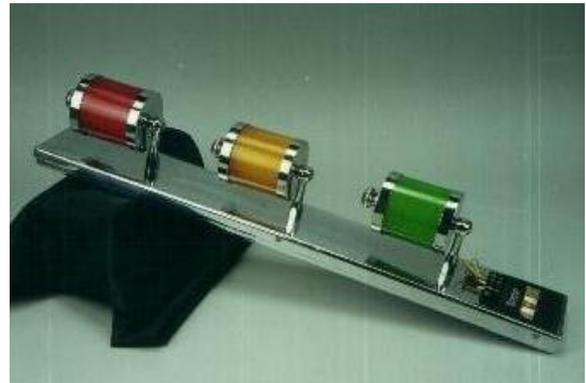


Fig. 1: Omni Type



Fig. 2: Panel Type

retardant lenses in different colours (such as RYB or RYG) for AC phase identification. Normally, three such units are vertically mounted on a rust-proof frame, which can be fixed on a suitable support in front of the running busbar at appropriate distances. Visibility is assured to be within 30 meters at the sides, when the unit is mounted at a height 10 to 15 meters above ground level.

Approximate dimensions for the Omni Type are: 63cm (Height) x 9cm (Width) x 12cm (Depth at the maximum point).

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I N V E N T I N G N E W T E C H N I Q U E S O F P R O D U C I N G L I G H T

Ordering specification: "BINAY DSL/CRS Unit with three metal body fire-retardant circular modules consisting of LED arrays (visibility 30 meters), in chrome-plated brass body mounted on rust-proof vertically mountable base plate. Wattage with LEDs in two equally spaced parallel circuits is 1watt max. Available in red, green or yellow. Life: 11 years. "

N.B. While the conventional colour coding of 3-phase indications is red, yellow and blue (RYB), at present, blue LEDs are extremely expensive; as such, many users prefer green in place of blue. However, if required, we can supply blue units to comply with the RYB standard.

Panel Type: This model is a simpler version, and has limited visibility on the sides while providing greater axial visibility (see figure 2). It consists of three DIN-sized LED Matrix Annunciator windows (each of size 96mm x 96mm) in different colours (such as RYB or RYG) as light sources. The life of such units is 11 years continuous burning.

Approximate dimensions for the Panel Type are: 69cm (Height) x 14cm (Width) x 36cm (Depth at the maximum point).

For both the Omni and the Panel Type, power connections are made to four input terminals (one common neutral, and three phase lines) mounted at the base of the unit (If desired, three MCB units can also be provided instead). These units can be supplied in 110V, 240V or 415 volts AC; or 220V or 440V 3-wire DC.

These LED DSL/CRS units are extremely economical if the following facts are considered:

- Saving in electricity, as low-wattage LED modules replace 3 x 100-watt bulbs. This can result in a saving of nearly Rs. 15,000.00 per annum in electricity charges alone
- Saving in maintenance and changing costs incurred by personnel in replacing failed filament bulbs
- Saving in the cost of replacing more than 24 bulbs over a 12-month period – this can amount to as much as Rs. 250.00 per annum (normal life of a filament bulb is 1000 hours in an ideal, vibration-free condition, burning 24 hours a day).

Safety and reliability, resulting from the elimination of random bulb failure

IMPORTANT TECHNICAL NOTE REGARDING USAGE OF LED

CRANE BUSBAR INDICATORS ON 415VAC: As per our experience with our other customers, we find that the indication of failure of any phase is difficult to ascertain for quick indication if the three LED indicators in the Crane Busbar Indicator unit is connected in delta connection, i.e., in phase-to-phase condition (six input terminals are provided on the indicator to enable the customer to make connection to the phases, two terminals for each phase).

Specifically, when using 415VAC LED type indicators, if connection to the three LED indicators is made in delta connection and if one phase fails, then the particular LED indicator does not go OFF but burns at a reduced voltage of 230VAC as it comes in series with one of the other LED modules. As such, it continues to conduct current and remains lit with half the light intensity. When using LEDs, this indication (at half intensity) is not clearly apparent to the viewer as an absolute indication of phase failure. Please note that this is not a defect, but a problem of pure electrical physics – 230VAC is still being supplied to the LED unit through the series connection.

However, if we connect the set of lights in a phase-to-neutral condition (star connection) and design the LED indicators in the Crane Busbar for 230VAC, the indication will be very clear, as it will either be ON or OFF. In this case, a separate neutral wire has to be run to the Crane Busbar Indicator at the site. This can be of very small current capacity (not exceeding 0.1A), and then the 230VAC LED modules can each be connected in phase-to-neutral condition. We feel that the user will find this to be more suitable for a clear indication, even though it entails the small problem of running a low-capacity neutral wire to the indicator unit at the site.]

THE BINAY LED DSL/CRS DESIGN IS PATENTED (PENDING), AND AS SUCH IS A PROPRIETARY PRODUCT



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INVENTING NEW TECHNIQUES OF PRODUCING LIGHT