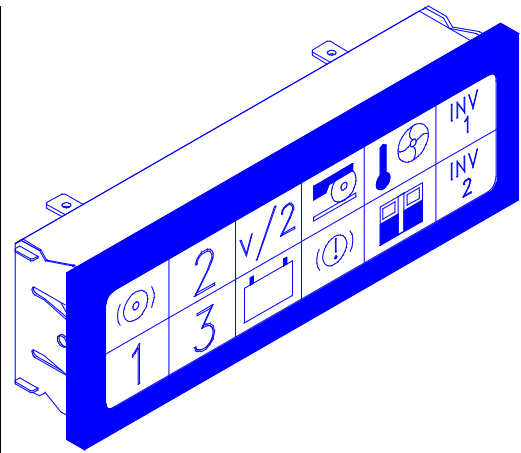


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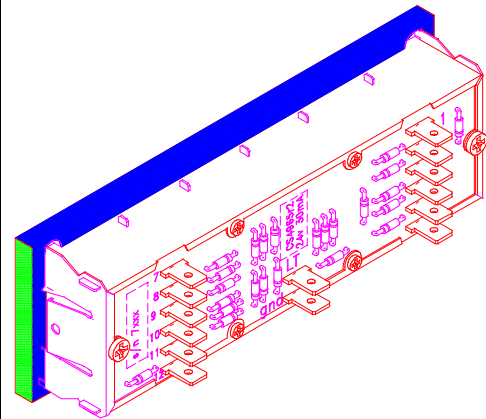
12 element LED Luminous Indicators

These indicators use Light Emitting Diodes (LED's) to replace incandescent lamps providing an almost indefinite operating life and resistance to vibration. Each of the 12 elements uses 3 bars each of 4 LED's; configured so that in the event of a single diode failure, the element still illuminates. The indicator design withstands transients, electrostatic discharges and electromagnetic interference to the new IEC standards (IEC1000). Connection to the unit is via standard 6.3mm x 0.8mm spade connectors. Visibility in daylight conditions is excellent due to the high brightness LED's used and the integrated red filter / legend. Design upgrade June 2001 to incorporate self-healing protection capacitors, and surface mount components

The indicator is manufacture from laser-cut 316 stainless steel with a black anodised 6061-T6 Aluminium front bezel. A tough glare-resistant polycarbonate front panel is supported by a stainless steel grid to provide an extremely rugged assembly. Electronic components mount on two back to back printed circuit assemblies. Each assembly is coated with a tough solvent resistant silicone based conformal coating which provides moisture, mould protection, tropic proofing and UV protection to MIL STD 810C. The indicator size matches the DIN43700 panel size of 48 x 144 mm and is easily inserted from the front of the panel, into a 45 x 138mm cutout, and self-locks in position.



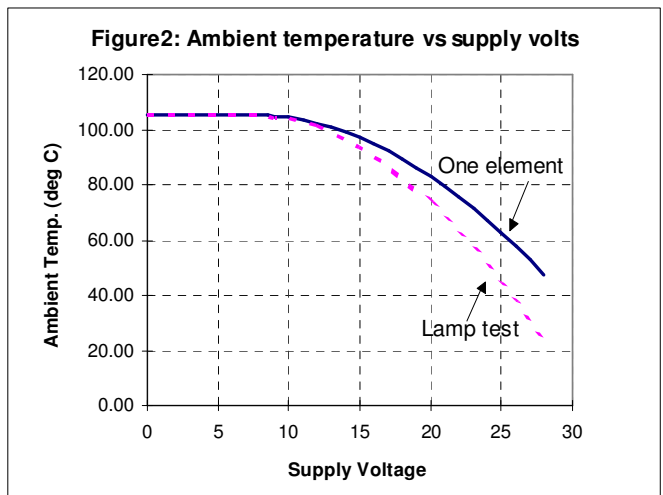
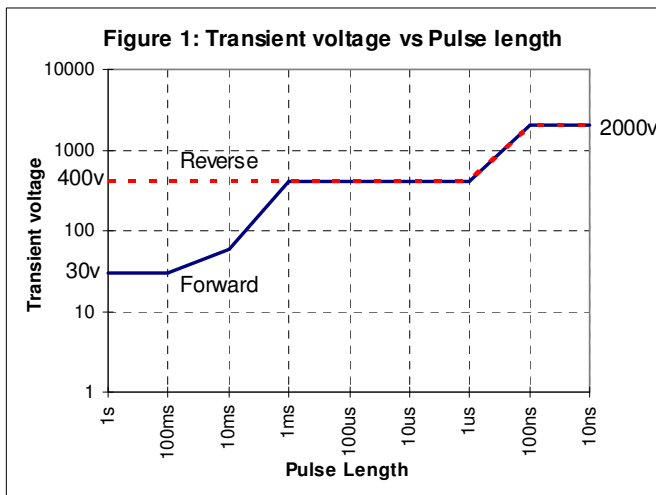
Front View



Rear View

Electrical specification:

Parameter.	Condition	Min	Nominal	Max
Power supply	-5 to 40°C	+20V d.c.	+24V d.c.	+28V d.c.
Maximum surge voltage	< 100ms	-400V		+40V
Transient rejection (Fig 1)	<1micro Second	-2000v		+2000v
Supply current (single)	24.0V, 25°C	22mA	26mA	30mA
Supply Current (lamp test)	24.0V, 25°C	280mA	316mA	360mA
Operating ambient temperature (Fig. 2)	Single	-10°C	25°C	50°C
Operating ambient temperature (Fig 2)	Lamp Test	-10°C	25°C	40°C
Luminosity mismatch (between elements)	24.0V, 25°C		10%	20%
Luminosity (each element)	24.0V, 25°C	110mcd	168mcd	225mcd
Operating humidity	-5 to 40°C	5%		95%



Mechanical Specifications

Parameter	Min	Nominal	Maximum	Unit
Bezel Thickness	5.0	6.0	6.2	mm
Bezel Height	47.5	48.0	48.5	mm
Bezel Width	135.5	144.0	144.5	mm
Clearance behind panel #	45	50		mm
Cutout width required	137.8	138.0	138.2	mm
Cutout height required	44.0	45.0	46.0	mm
Panel thickness	2.9	3.0	3.1	mm
Weight		190		grams
Vibration @ 50Hz			1g RMS	
Shock, 20ms half sine			20g Peak	
Max Connector Lateral force			100	Newton
Maximum Front panel force			650	Newton
Maximum Rear panel force			650	Newton

could be reduced to 40mm by using right angle connectors

1. **Installation Notes:** Check the cutout the for the indicator to ensure that the edges are not burred or have paint drips, all surfaces should have a 0.5mm chamfer.
2. **Wiring:** The wires used should be 16 gauge; the connectors should be insulated double crimp types.
3. **Important:** The wiring must be supported at a distance of 150mm or less from the connectors (using cable ties or similar) to prevent vibration from fatiguing the wires where they enter the connector. Depending on rear panel access, it may be easier to attach the wiring to the indicator before insertion into the panel. The wiring should be tested before insertion. The indicator can then be pressed into the panel (first check the legend orientation) by pressing firmly on each end of the black Aluminium bezel until each end clicks. Press on the back of the indicator to ensure it is secure; it may be necessary to insert a screwdriver under each securing tab to ensure it locks (see figure 3). Use care to avoid bending the anti-rattle tabs.
4. **Cleaning:** After installation and subsequently the indicator should be cleaned with an alcohol based cleaner or damp cloth. **Do not** use abrasive or alkali based cleaners.
5. **Usage notes:** The lamp test function should be incorporated into the daily run-up test of the vehicle.
6. **Maintenance:** Annual inspection of the wiring and rear panel connectors is recommended.
7. **Electromagnetic compatibility:** The indicator design withstands typical electrostatic discharge caused by contact with static charged persons and equipment and near by lightning strikes. Additionally it will withstand switching spikes to be found on typical vehicle power supplies; figure 4 shows the transient rejection as a function of pulse width. Note, however, where it is expected that a supply overvoltage condition (of more than 30volts for more than 1second) will occur with the indicator illuminated; or repetitive spikes (of 1volt-second at 10Hz or more) occur during a fault condition; then it will be necessary to install additional protection components to protect not only this indicator but other electronics installed on the vehicle.
8. **Connection table:** Refer to Goninan Drawing D14530 Rev 2
9. **Flammability:** The indicator has not been tested for flammability; however due to the quantities (<100g) of polycarbonate, acrylic and epoxy used it is reasonable to expect generation of some smoke and fume when exposed to a fire. In the event of excessive voltage causing the unit to fail, the design and components used will not cause ignition, Otherwise meets teh requirements of UL94V2

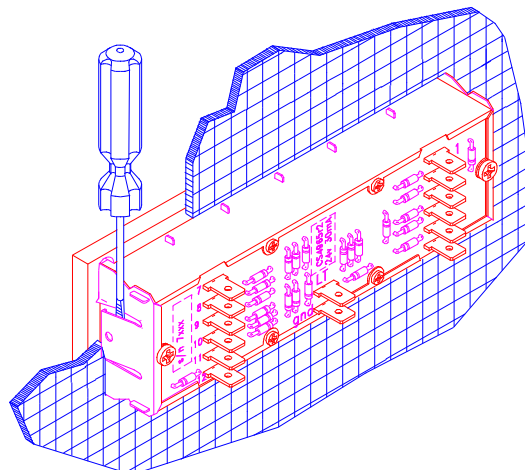


Figure 3 Using a screwdriver to seat locking tabs